MARINE REVIEW

WEEKLY.] AND MARINE RECORD. [ESTABLISHED, 1878.

Vol. XXVI | Published every Thursday at 39-41 Wade Bldg by the Marine Review Pub. Co. | CLEVELAND, O., DEC. 25, 1902. Eastern Office, 1023 Maritime Bldg., New York City. Chicago Office, 373 Dearborn St. [Entered at Cleveland Post Office as second-class matter.] | Subscription $3.00 year. Foreign $4.50 year. Single Copy 10 cents. | No. 26

FOREIGN STEAMERS IN UNITED STATES COAL TRADE.

The Maritime Association of New York is greatly exercised over the resolution introduced in congress by representative McCall of Massachusetts, proposing to admit for a temporary period foreign steamers to the carrying of coal between United States ports. Since 1817 foreign vessels have been denied the privilege, but since that time they have never ceased their attempts to secure the repeal of the act which excluded them. The maritime association looks upon the McCall resolution as an entering wedge to secure the repeal owners of foreign vessels desire. Members of the association are strong in their opposition and have deluged Gen. Grosvenor, chairman of the house committee on merchant marine and fisheries, with telegrams and petitions of protest. The Maritime Association adopted the following resolutions:

"Whereas, there has been introduced in the house of representatives by Representative McCall a joint resolution (234) proposing to temporarily extend the privileges of the coasting laws to foreign steamers carrying coal between American ports, which resolution is now before the house committee on merchant marine and fisheries; and

"Whereas, there are many more vessels under charter and offering at the various coal ports than there are coal cargoes to carry, owing to delay in delivering coal at tide water; and many vessels so chartered are, and in some cases for many days have been, collecting demurrage because of delay in loading; and

"Whereas, if 100 foreign steamers were permitted to carry coal between American ports no more coal could be moved than is now being moved; and

"Whereas, the joint resolution in question strikes an unnecessary blow at a protective policy that has been uninterruptedly in force for eighty-five years, as a result of which our coastwise shipping is the greatest in tonnage and the finest in the world today; therefore, be it

"Resolved, that the Maritime Association of the Port of New York is opposed to the passage of the McCall joint resolution as being unnecessary; first, because its passage would not cause an increased movement of coal; second, because there are now many American vessels under charter at the coal ports which cannot obtain cargoes, besides which many other vessels are offered for such cargoes; and, third, because the passage of such a resolution would strike a blow at the American protective policy, wherefore it is pernicious and dangerous; and be it further

"Resolved, that copies of this resolution be sent to the chairmen of the house committee on merchant marine and fisheries and of the senate committee on commerce."

A. R. Smith, superintendent of the Maritime Association, sent a letter to Representative Grosvenor in which he said:

"The difficulty in the more rapid and widespread distribution of coal along our coast is in no wise due to the lack of shipping ready to carry it; but is wholly due to the small quantity of coal brought from the mines to the seaports from which it is usually shipped. We are able, if given time—and we feel sure you will not unduly abridge us in this—to furnish a great number of specific cases of vessels that are under charter, lying at the coal wharves in the shipping ports, where many of them have been for a number of weeks and on account of which detention they are receiving daily demurrage pay, and are unable to obtain coal cargoes.

"In addition to this, any quantity of vessels are obtainable, many of them being daily offered for charter, but failing for want of coal at tidewater to carry. There is no probability of the rush of coal to the seaboard overtaxing the capacity of American tonnage offering for its transportation. Under these circumstances no good purpose whatever can be served by the passage of the resolution. If there are any responsible interests asking for its passage, they should be required to make their reasons public by appearing before your committee and stating them.

"For more than six months hundreds of American vessels have been laid up because of the lack of coal seeking transportation. This tonnage and much more than that during the summer was otherwise employed is available and eager for coal cargoes Scarcely a fraction of the tonnage so offering is in use nor is the larger part of it likely to be so employed at any time in the near future.

"It appears to us that those really responsible for the small quantity of coal at tidewater are trying to divert the attention of the public from themselves and to place the responsibility for the delay in delivering coal upon those in no way responsible for it. As you are well aware, the domestic shipping interests of the country are all that for forty years have given any standing to the United States as a maritime nation. Our policy of permitting cheaper built and cheaper operated foreign vessels to engage in the carrying of our foreign commerce on terms of perfect equality with American vessels has all but driven our shipping from the sea. For eighty-five years the act has remained uninterruptedly in force, excluding foreign vessels from our domestic trade. As a result our vessels in that trade have steadily increased in number and tonnage and have prospered. Having driven American vessels from our foreign trade foreign shipping interests have long desired to secure the repeal of the act of 1817 in order to work the havoc and inaugurate the decline in our domestic shipping that they have already wrought in our foreign trade. Whatever the purposes of the McCall resolution its effect, if passed, would be most depressing and disastrous, as it would at once bring into activity all of the forces that have so long striven to have the existing act wholly repealed."

TRIAL OF MONITOR NEVADA.

The single-turreted monitor Nevada, the latest, and according to the naval men who constituted her trial board, probably the last of her type the United States will ever construct, received her speed trial last week over a measured course, 13.2 knots long, on what is known as the Cape Ann route. The monitor exceeded her required speed by about 1½ knots and her performance was very satisfactory, though Capt. Charles A. Blair, who managed her for the builders, the Bath Iron Works, declared that she "steered like a hog on a bag of apples." Capt. Charles J. Train, formerly captain of the battleship Massachusetts, was president of the trial board. The Nevada got under way shortly after 8 o'clock and made her way down the harbor under two boilers and natural draft. Capt. Blair made a skilful pick-up of the first buoy. The wind was northwest and almost broad abeam. As the clumsy monitor picked her way she put her flat nose into the sea until it was running over her in a smooth sheet. From the time the trial began her forward deck was never dry. Aft she was wet to the superstructure, although the sea was quiet.

According to the trial board's chronometer, the first buoy was passed at 11:36:46.5, the screws making fairly close to 200 revolutions a minute. It soon became apparent that she was doing better than her required 11½ knots, wriggly though her wake was. The second stake boat was passed at 12:05:47.5, and the speed showed 13.6 knots an hour for the first half of the first leg. The second half of the leg was reached at 12:38:48.5, which showed the monitor to be making only 11.9 knots, reducing the average speed for the whole leg to 12.8 knots an hour. A double curve was made for the turn, but in spite of the extra slew she thus got, the Nevada occupied six minutes in making the turn. She passed the stake boat again, going south, at 12:44:48.5, and headed more up into the always freshening breeze making wetter weather of it than ever, and throwing spray all over herself. At one time she actually tossed a feather on top of the superstructure, the beautiful buff paint of her funnel turned a deep chocolate, and then peeled off in great flakes that strewed the sea astern. She made the midway stake boat again at 1:16:48.5. The last boat was passed at 1:45:15 flat, and the monitor sidled over toward Gloucester to try turning around. She occupied five minutes in making a complete circle this time.

The Bath Iron Works kept tab on their own vessel, and got differing results from those of the naval board. They made the average speed 12.95 knots an hour, against 12.8 recorded by the officials. They made 186 revolutions a minute, as against 200 recorded by the board. Mr. Newell, who kept the log for the company, said after the trial that the coal consumption showed 2.4 tons per hour per indicated horse power used. The average fireroom temperature was 110° Fahr., and the engine room temperature 90°. During the trial the high-pressure cylinders were "linked up;" that is, they were run very near a dead center to shorten the stroke as much as possible. The starboard cylinder was linked up 95 per cent., and the port cylinder 67 per cent. The propellers have 7.8 ft. of pitch, and each has a superficial area of 20 sq. ft.

The vessel is of 3,230 tons displacement, and her contract price is $960,000. No bonus was offered for extra speed, of course, which explains in part why the craft was not harder pushed. The conditions under which she registered nearly a steady 13 knots show that she could have done 14 had she been called on for it.

It is reported that the Cunard Steamship Co. has let the contract for the two 25-knot steamships which are to be subsidized by the British government. One contract goes to the Fairfield Ship Building & Engineering Co. of Glasgow and the other to Vickers Sons & Maxim, Barrow.

STEAMBOATING ON THE PENOBSCOT.

The first steamboat was placed on the Hudson river by Fulton in 1807; its speed was 5 miles an hour. In the Bangor Register, May 27, 1824, it is noted that the first steamboat which ever appeared on the Penobscot river came on Sunday evening, May 26, commanded by the principal agent of the Kennebec Steam Navigation Co., Capt. Smith Cram, from Montville, who contemplated making this river a branch of this line, should suitable encouragement be given. The subject created some interest, and says the Register, "So novel a sight as one had never before seen, and without previous notice, occasioned a very pleasing surprise." At about 9 o'clock the next morning 120 persons went on board and were safely transported to Bucksport; returning to Bangor in the afternoon after having remained in Bucksport about an hour.

The Maine, for that was the name of this first steamboat, also made a trip to Belfast, attracting a large crowd of spectators, and taking a party to Casline on an excursion. She was a side-wheel steamer, constructed from the hulls of two schooners, with beams across each, both keels being retained. Her measurement was 125 tons, her cost, with a second-hand engine, was $13,000. During that season she made weekly trips from Eastport to Bath and back, touching at Belfast, connecting at Bath with the Patent for Portland and Boston.

This was the inauguration of a steamboat line along the coast of Maine. But even at that early day, the undertaking met with opposition. In June the steam brig New York, Capt. Rogers, commander, commenced running three times a month, from Boston to Portland, Belfast and Eastport. She proved a formidable competitor. The fare from Belfast to Boston was reduced to $6, including meals. Persons wishing to take passage from Boston were requested to leave their names at the Maine hotel, "and as the boat would wait but a short time" it was necessary for passengers to make arrangements for being called. Passengers could be landed at any intermediate point on the coast or river by previous agreement. In 1826 all the steamboat lines in Maine were controlled by the Kennebec Steam Navigation Co. From this time until 1834 the little town was visited occasionally by the Waterville, Connecticut and other steamers.

In 1834, the year in which Bangor became a city, its rapidly increasing population and business requiring regular commercial facilities of transportation, the steamer Bangor of 400 tons, built in New York, commenced running between Bangor, Portland and Boston, Capt. George Barker of Bangor in command, followed by Capt. Samuel H. Howes of Chatham, Cape Cod, Mass., who continued until 1842 when he changed to the Charter Oak. The Bangor arrived at Bangor for the first time on Saturday, July 12, 1834. She made her first excursion trip down the Penobscot, Monday, July 14, to Castine and Belfast, with nearly 400 ladies and gentlemen on board. Salutes were exchanged at the different ports with great rejoicing. The boat returned at 6 o'clock, having accomplished the circuit of nearly 100 miles in ten hours, including stops. She sailed on her first trip to Boston, Monday morning, July 21, at 7 o'clock, with nearly 150 passengers. The Boston Globe says:

"The first iron warship of our navy was the steamer Bangor. In 1846 the naval authorities paid $30,000 for the iron steamer Bangor, which caused the surrender of the Mexican fortress Alvarrado without firing a shot or spilling one drop of blood. She was 131 ft. over all, 23 ft. beam and 9 ft. depth of hold. When the wind was favorable she hoisted a spread of sail on her three schooner-rigged masts. In July, 1834, the Bangor paid her first visit to Boston."

The style of the Bangor awoke the admiration of sea-faring men in general, and they all pronounced her the best looking vessel of her class that ever graced Boston harbor.

In August of the same year, she was burned with her cargo, nothing being saved but the iron hull. Her cargo consisted of a menagerie of wild animals consigned to Bangor. The disaster occurred on the first regular trip. Having no landing to make, the captain took the outside route running near the shore at Sabbath day harbor, Islesboro, that his family might see the steamer. At a moment when all on land and vessel were rejoicing in the welcome, a sharp blaze rose from the steamship. The vessel was on fire. A panic was created among the animals, every one that was loose dashed overboard and swam to the island. The islanders were naturally terrified, and a sudden scrimmage was made for guns, old swords and all sorts of weapons. Capt. Parker ran the vessel to the nearest landing, where the passengers and crew were rescued and the remaining portion of the menagerie, with much valuable freight was saved. The cause of the fire was supposed to have been a defect in the boiler.

The steamer was afterwards rebuilt at Bucksport and sold to the government and sent out to subdue the Mexicans under the name of the Scourge, with Lieut. Hunter in command. The naval force in charge of Commodore Conley, comprised three vessels of war—frigate Potomac, steamers Mississippi, Vixen, Spitfire and Waterwitch, sloop-of-war St. Mary, brig Porpoise, the Ketch, five small gun schooners, sloop-of-war Albany and the Scourge. The later had been sent on ahead, and rendered this imposing force unnecessary, as the Scourge had caused the fortress to surrender before the others hove in sight. For winning this fight Lieut. Hunter was, through jealousy on the part of the other officers, court-martialed and dismissed from the service. He was afterward reinstated by the president of the United States, under pressure of public opinion.

Other boats followed the Bangor and two lines were established, one the Outside route between Bangor and Boston, the other called the Inside route, running from Bangor to Portland. On the Portland route, were placed successively the fine steamers Governor, States of Maine, Daniel Webster and the Richmond. The Daniel Webster was a very fast boat. She was commanded by Capt. Otis Ingraham from the time she went on the route in 1853 until she was withdrawn in 1861 to enter the United States transport service. The Bangor Commercial says: "Comparatively few persons are aware that a relic of the famous old boat is still used as a cook-room for a restaurant in Pickering square. During the remodeling the steamer's house came into the possession of Ira Goodhue, the first restaurant keeper in Bangor, who bought it at auction and had it placed for a cook house in connection with his shop. A peaked roof was placed on it, and windows put in; but it remains nearly as it was. The timbers in the ceiling and floor run across as formerly, and the old hatchway is now used as a ventilating scuttle. The Webster was finally sold to run on the St. Lawrence river where she was burned."

The Telegraph, the Huntress, the Charter Oak and the T. F. Secor were among those which run on the "Outside" line until Capt. Menemon Sanford of New York, put on the Sanford Line, of which the old Penobscot was the first, followed by the Boston, the Menemon Sanford, Katahdin and Cambridge. The Telegraph was commanded by Capt. Howes. The steamer Portland with Capt. Jabez Howes, and the Empress with Capt. Coyle, were in the line of the Boston, Portland and Bangor travel in 1835 and 1836. In 1846 Capt. Menemon Sanford brought on the fast favorite steamer T. F. Secor of 200 tons, running between Bangor, Ellsworth and intermediate landings on the Penobscot, connecting with the Boston line at Belfast. His son Thomas B. Sanford was commander of the Secor. This route was afterward extended to Machiesport with Capt. Charles B. Sanford in command, followed by Capt. Charles Deering. The Secor served in the war of the Rebellion as a despatch boat, and was burned off Charlestown harbor, S. C.

The Sanford Independent line, between Boston and Bangor, was inaugurated by Capt. Menemon Sanford in 1845. He was a remarkable man. Commencing as skipper of a sloop on the Sound he subsequently went into steamboating on the same waters and to some extent on the North river, competing with Commodore Vanderbilt and others. Making an amicable arrangement with his rivals, he withdrew from those waters and turned his attention down east, running boats on the Boston and Kennebec line for several years. He also acquired an interest in the Portland and Boston line about 1845. With Stanton and Spicee of New York, he established a line of steamers between New York and Philadelphia, touching at Cape May. Some disagreement arising in 1852, Capt. Sanford dissolved partnership and established the well known Sanford's Independent Line between these cities, which continued until 1861 when it was broken by the government for war service.

Capt. Sanford died in 1852, but the extensive steamship business which he had established was successfully prosecuted by his widow, who largely partook of his energy, and from his beautiful home on the Hudson superintended the business interests, assisted by her sons, five of whom were trained to active steamboat life. The first steamer on the Eastern line of this company was the Penobscot, of about 500 tons. Capt. Thomas G. Jewet was in command and Edward H. Sanford was clerk. She came upon the route from Kennebec, and had for pilot Capt. William Flowers, who was the first to make the run from Cape Ann to Monhegan, which route has been held ever since. In establishing this line Capt. Sanford competed with James Cunningham, a well known and energetic steamboat proprietor, who for several years before and after operated on the eastern waters as far as St. Johns. Among his boats were the Charter Oak, Governor, Admiral and the Senator.

The old steamer Penobscot was built expressly for the Boston and Bangor route and was commanded by Capt. T. H. Jewett. She left the new wharf adjoining the old steamboat wharf at the foot of Union street, Bangor, for Boston direct, without touching at Portland, every Tuesday and Friday at 11 o'clock in the morning. Returning she left T. wharf, Boston, every Wednesday and Saturday at 5 o'clock in the afternoon. Fare, $3, meals extra, John W. Garnsey, agent.

In 1850 the new steamer Boston, of 800 tons, built expressly for this route, was brought on by Capt. Thomas B. Sanford. She was a staunch and excellent seaboat, and was said to be the twenty-second steamer which Capt. Menemon Sanford had built. Capt. Charles B. Sanford and Loomis Taylor were clerks, as also was William H. Pegg for several years. The Boston was placed on the Philadelphia line in 1854 and was replaced by the Kennebec, Capt. C. O. Clark. The Boston ended her days in war service by grounding in Otter Sound, South Carolina, being burnt to prevent her from falling into confederate hands. In the winter of 1853-4 the Ocean of the Kennebec line was run by Capt. Edward H. Sanford between Winterport and Boston.

In 1855 the splendid steamer Menemon Sanford of 1,000 tons, Capt. E. H. Sanford commanding, which had run one year on the

Philadelphia route, took the Ocean's place. In April, 1861, the Sanfords with their accustomed liberality and loyalty, advertised to carry troops, munitions of war and authorized government agents on their steamers free of charge. In the fall of 1862 she was taken by the government for war service, and was wrecked on the Florida reefs, while transporting troops to New Orleans, as was supposed, purposely, by a pilot of rebel sympathies. Steamboat communication with the Penobscot river was now suspended, the Daniel Webster also having been taken for war purposes.

As may well be supposed, the new and beautiful steamer Katahdin, of 1,200 tons, Capt. C. B. Sanford, in command, George J. Wall and Levi L. Alden, clerks, came upon the route with a general welcome May 19, 1853.

Capt. J. P. Johnson, who had seen many years' service on the Philadelphia line and on its steamers in government employ, succeeded Capt. Sanford the following year and continued till 1858, when Capt. Henry S. Rich of Bangor took charge until his death in 1872. Capt. W. R. Roix of Belfast then assumed command. The Katahdin was a great favorite with the public and was a very strong seaworthy boat, conveniently and handsomely fitted up. She was built at the ship yard of John Englis & Sons in New York, and was continued on the route for many years with the exception of 1864. She traveled bravely through the ice, having more experience with that element than many Arctic steamers, running in the winter from Bucksport to Boston, her freight and passengers from Bangor being transported to Bucksport by rail as is done now with the Penobscot. Her last trip was made from Bangor to Boston June 18, 1894, with Capt. Otis Ingraham in command, carrying 173 passengers and a full cargo of freight. Her cost, when built, was $250,000. She remained at her mooring at East Boston where her boilers were removed and other material of value, when she was sold for old junk, having finished a long and useful life.

can resist this formidable pressue, and can work at practically any

The new steamer Cambridge of 1,500 tons, the largest and most sumptuous boat east of Long Island Sound, was brought on this line Sept. 2, 1867, by Capt. C. B. Sanford, with George J. Wall and Tyler Wasgatt, Jr., clerks and T. W. Holder, steward. She was continuously on the route until Capt. J. P. Johnson of the Katahdin took her in 1868 and continued until 1879 when he was succeeded by Capt. Otis Ingraham of Rockland. The most remarkable incident in her career was her disablement in the memorable gale of Sept. 8, 1869. She was on her upward passage to Boston and encountered the gale after making Monhegan. Her steam pipe and rudder were broken and she drifted in the darkness at the mercy of the elements, bringing up her anchors near the rocks of Pemaquid. Through these hours of imminent peril officers, crew and passengers made a most creditable exhibition of calmness and courage. All were finally relieved. These companion boats, Katahdin and Cambridge, previous to 1872, made together three round trips weekly during the busy season and since that time four round trips.

At the Bangor end of the route, N. C. Woodward was agent until 1851 when Loomis Taylor succeeded him, continuing until 1877 when Capt. James Littlefield assumed the position, and in 1880 was promoted to the post of general superintendent of the line at the Boston end, where William B. Haseltine had served as agent from 1852 until 1880.

In 1875 the ownership of the line changed and the previous organization was merged into the Sanford Steamship Co., new members being added. The Sanford's interest was finally withdrawn and the corporation was changed to the present Boston & Bangor Steamship Co.

The Sanford line during its thirty-seven years' record has ever kept fully abreast with the demands of the traveling public, each new boat being superior to its predecessors; and during its long career, although not entirely free from the casualties of steam navigation, but one of its passengers, reckoned by more than a million, has received injury from any accident or fault of its steamers.

The steamer Cambridge in command of Capt. Otis Ingraham, went ashore on a ledge off George's Island early on the morning of Feb. 10, 1886. She immediately commenced filling. The best of order was preserved and the passengers were all transferred to boats and landed, no lives being lost. From the time of striking until the seven boats put off it was less than half an hour. The captain and officers of the United States revenue steamer Dallas did everything in their power for the comfort of the passengers. No explanation of the accident was attempted. The boat was a total loss. Her freight was scattered along the adjacent shores, and it was impossible for a wrecking craft to work, on account of the exposed position. The steamer was valued at $140,000.

The Penobscot was placed on the river in 1882 by the Boston & Bangor Steamship Co., with Capt. Roix, commander. She was constructed in a very superior manner, magnificently finished and furnished. Her dimensions are about 255 ft. long, 38 ft. beam and 13 ft. depth. An accident happened to her in 1886 under Capt. Ingraham on account of a heavy rain and thick weather. She struck a ledge near Otter island, but taking but little water on account of her watertight bulkheads. The passengers, though somewhat frightened, behaved well and were landed and forwarded by rail to Boston. The boat was raised and floated and found to be much less injured than at first supposed. The palatial and swift steamer, City of Bangor, was placed on the route by the Boston & Bangor Steamship Co. June 17, 1894. She was the finest craft which ever plied in eastern waters. Cannon and whistles saluted her as she passed up the river. She was gaily decorated from stem to stern. Among her colors were the new code presented to her by the Bangor board of trade, in recognition of the name given the vessel. Capt. S. H. Barbour and Col. F. D. Pullen were the principal owners and movers in establishing this line, to whom much credit is due. Capt. Barbour has built for this line and others twenty-four steamers which are located all along the Atlantic coast.

The first steamer launched from the Brewer yard was the May Field in 1879, the year in which the company was organized. At this time few cottages were built at Bar Harbor, thus the business was not very good the first two years. One trip per week was made when there were passengers, Capt. Barbour commanding his own boat. Then business increased in 1880 when the City of Bangor was built; she was afterward sold to go out of the state and was wrecked on the coast of Massachusetts. The May Field was wrecked on the Maine coast, being owned at that time by the Bodwell Granite Co. With these two exceptions and the Cimbria, all the boats built by Capt. Barbour and his brother are still in active service. They at one time made trips to Ellsworth, doing quite a good business. These boats while in Capt. Barbour's hands were never allowed to run Sundays, he having respect for the Sabbath. They were offered and refused large sums of money to allow their boats to run on that day. Other steamers built were the Queen City, Buttercup, Nellie Kane, Cimbria, Florence, Leila, Susie May, Silver Star, Alice, Henry Morrison, Sedgwick, Castine, Creedmore, Mascot, Navis and others.

Quite a number of these steamers were built for the Bangor and Bar Harbor route. The Tremont was placed on this route June, 1895. She was a sister steamer to the Sedgwick which was built in 1892. They were essentially passengers boats, especially adapted for day travel. Their speed was about 12 miles an hour and they were capable of carrying 200 people. The Sedgwick was sold to the government for $10,000, for use in Mobile harbor as a transport from that city to a military station in the bay. This was in March, 1900.

The Cimbria was built in 1889 at a cost of about $20,000. She was named for a large German steamship of that name, which had been chartered by the Russian government at the time when there was prospect of war between Russia and Great Britain. This steamship cruised in American waters and put into Southwest harbor for safe anchorage, and being an object of interest people came from far and near to visit her, one of Capt. Barbour's boats conveying them back and forth. The Russians made such a good impression upon the Bangor steamship men that when a new boat was built to take the place of the City of Bangor, sold to Portsmouth, N. H., they named her the Cimbria. The big Cimbria was lost years ago in the North sea and the one named for her was wrecked at Bass Harbor in October, 1898, caused by a wrong signal to the engineer. She went on the ledge at high water. The Sedgwick went immediately to her relief and took all passengers and freight, no passengers being injured or freight lost.

The steamer Rockland and M. and M. belonged to the Boston & Bangor Steamship Co., and were on different routes on the river and bay. A number of other small boats have run on the river, among them the Marjorie, still running to West Brooksville the Annie commanded by Capt. Horace Atwood, which formerly run between Bangor and Hampden.

BOSTON STEAMSHIP CO.'S BID ACCEPTED IN PART.

Secretary Root has decided to accept the bid of the Boston Steamship Co. so far as it affects the transportation of troops and military supplies between the United States and the Philippines which are sent or received by way of either Seattle or Tacoma. The secretary explained that the existing service at San Francisco would be continued for the present and aded that if satisfactory arrangements could be made for the disposal of army transports, either by sale or charter, the transportation companies at that port would be given a share of the government business. Secretary Root intends to ask congress to modify existing law so as to authorize the secretary of war to contract for the transportation of troops and supplies for a longer period than one year, so that he may make better terms for such service than is possible under the present system of annual contracts.

The navy department continues to receive applications from prospective bidders for plans and specifications of the two new armored cruisers. Among the concerns making requests are the Bath Iron Works, Bath, Me.; Cramps, Philadelphia; Fore River Ship & Engine Co., Quincy, Mass.; Maryland Steel Co., Sparrow's Point, Md.; Moran Bros Co., Seattle, Wash.; Newport News Co., Newport News, Va.; New York Ship Building Co., Camden, N. J.; Susquehanna Boat Works, Havre de Grace, Md.; The Townsend & Downey Ship Building & Repair Co., Shooter's Island, N. Y.; Union Iron Works, San Francisco, Cal.; and the United States Ship Building Co., New York.

REPORT OF SHIPPING SUBSIDIES COMMITTEE.

The Review has already given the gist of the report of the shipping subsidies committee to the British parliament, but as the subject is quite an important and interesting one the full text will doubtless be worth reading. Its full purport is generally stated in the fifth section—that a general system of subsidies other than for services rendered is costly and inexpedient. The following is the text of the eight recommendations:

"1. That the granting of shipping subsidies at considerable pecuniary cost by foreign governments has favored the development of competition against British ship owners and trade upon the principal routes of ocean communication, and assisted in the transfer from British to continental ports of some branches of foreign and colonial trade, but that notwithstanding the fostering effect of subsidies upon foreign competition British steam shipping and trade have in the main held their own, and under fair conditions British ship owners are able to maintain the maritime commerce of the country.

"2. That the subsidies are the minor factor and commercial skill and industry the major factors of the recent development of the shipping and trade of certain foreign countries, and notably of Germany, where, for example, the granting of through bills of lading via the state railways has had an important effect. In some other countries subsidies have led to no satisfactory results.

"3. That the subsidies given by foreign governments to selected lines or owners tend to restrict free competition, and so to facilitate the establishment of federations and shipping rings; and, therefore, that no subsidy should be granted without government control over the maximum rates of freight, and over this combination of subsidized with unsubsidized owners to restrict competition.

"4. That the competition of British owners with their commercial rivals upon fair conditions without government interference by way of subsidies or by way of control of freights is more healthy, and likely to be more beneficial to the nation and empire than a state-subsidized and state-controlled system, under which the ship owner would have to depend less upon his individual energy and skill, and more upon the favor and support of the government.

"5. That a general system of subsidies other than for services rendered is costly and inexpedient.

"6. That rare cases occur where, in view of special imperial considerations, subsidies are necessary for establishing fast direct British communication, and that at the present moment such a subsidy should be favorably considered for a line to East Africa, where there is no direct British steamship service, and where British trade is handicapped by foreign subsidized steamship lines.

"7. That in all cases of subsidies it is desirable, as far as possible, to observe the following principles: (I.) That every endeavor should be made to maintain the pre-eminence of British lines, and that it is desirable to secure unification of control by placing the final negotiations in the hands of a small permanent committee. (II.) That a condition of adequate speed should form part of every subsidy to ensure rapid communication within the empire, or to secure fast carriers of food supplies in time of war or to meet admiralty requirements. (III.) That no British subsidy should be granted except on condition that the whole or partial sale or hire of any ship in receipt of the subsidy cannot take place without permission of the government. It is desirable that the majority of the boards of directors of subsidized companies should be British subjects. (IV.) That on subsidized vessels the captain, officers and a proportion of the crew ought to be British subjects.

"8. That with a view to the fair competition of British ship owners with their foreign rivals, board of trade regulations should be enforced against foreign ships equally with British ships. (II.) Light dues should be abolished. (III.) Means should be taken to obtain the removal of foreign laws and regulations which exclude British ship owners from the trade appropriated by various foreign powers to their own shipping as 'coasting trade,' and that if need be, regulations for the admission of foreign vessels to the British and colonial trade of this empire should be used with the object of securing reciprocal advantages for British ship owners abroad."

In the course of their report the committee point out that it is in indirect forms of bounty guaranteed by the German government, namely, exemptions from payments of customs duties and preferential railway rates that state assistance is given, and chiefly given in that country to shipping enterprises. The possession of a fast mercantile marine is stated to be best secured by making speed a condition of mail subsidies. The committee are of opinion that a condition to ensure speed, and in some cases high speed, should be attached to every subsidy. On this point of speed it is further said: "The more so because not only are there very great advantages in rapid communication, and especially rapid communication between different parts of the empire, but also because fast mercantile vessels are valuable as carriers of our food supply in time of war. As far as possible a condition should be attached to every British postal subsidy that the speed of the ships employed shall equal the highest speed of foreign mail ships trading on the same routes."

Keeping to the subject of admiralty requirements the report continues: "Your committee, after due consideration, is of opinion that the principle of subsidies by or for the admiralty is only justified for obtaining a limited number of vessels of the highest speed and great coal endurance among the mercantile marine built according to admiralty requirements for purposes of national defense, provided that the admiralty find it more economical to subsidize swift merchant steamers than to build naval ships."

After reviewing the question of whether subsidized ships should be allowed to be leased or sold into foreign control, the report proceeds: "Your committee do not think that an admiralty subsidy to a mercantile vessel is of any use merely as a retaining fee in time of war, and are of opinion that no subsidy should be paid on that ground. The possibility of commandeering and subsequent payment of fair value is well known, and, indeed, there is reason to suppose that on an emergency vessels required by the government would be freely offered without any retaining fee, but in time of peace an admiralty subsidy to specific vessels is in legal phraseology good consideration for the right by the government to prevent their sale or hire into foreign control. The real question is, can such a right be enforced? It is obvious that apart from legislative restrictions, commercial considerations alone are likely to enter into dealings with ships or other property, and such dealings might occur at an important national crisis. It has been urged with much truth that a sale to a foreigner can always be accomplished by appointing a British nominee to hold the ship in trust for him—a device of which the framers of the recent French law were obviously conscious, and which they propose to meet, if discovered, by penalty of forfeiture. In this matter, therefore, it is impossible to draw a distinction between a British and foreign purchaser, and your committee are strongly of opinion that no British subsidy should be granted except on condition that the whole or partial sale or hire of any ship which is, or has been, in receipt of the subsidy cannot take place without permission of the British government. There is no objection to the government exercising their control so as to give themselves a right of pre-emption. Against such legislation various arguments have been raised, the main one being that no company would enter into such an arrangement with the government without receiving an excessive subsidy, to which your committee feel it can only be replied that two German companies are willing to do it without any such excessive subsidy (the North German Lloyd receive £280,000 a year, and the German East Africa Co. £67,500). Your committee are further of opinion that it is desirable that the majority of the boards of directors of all companies owning subsidized ships should be composed of British subjects."

Referring to the suggestion of a general system of subsidizing for the training of seamen, the committee state that they have not been able to learn that foreign governments have taken any active steps toward a general system of this kind, and they are not prepared to recommend it. The committee prefer for the time being the more modest experiment of placing training ships at suitable ports.

After quoting figures showing the world's distribution of tonnage, the report contains the following paragraph: "Though your committee are of opinion that the general conclusion on the whole to be drawn from the last paragraph is that British shipping creditably holds its own notwithstanding that foreign shipping increases in proportion more rapidly, because it starts from a lower figure, yet they desire to add a note of warning or comment. We have been foremost at sea with the finest mercantile marine in the world; we are now meeting with severer competition than we have ever experienced, and our efforts must therefore be proportionately greater if we are to maintain our supremacy."

The following paragraph in the report is also of great interest: "The board of trade considers that the present regulations are most vigorously administered against foreign vessels in our ports, and fears that an attempt to enforce them more than is done at present would lead to friction and disagreement which the results would not justify, but in view of the rather prevalent feeling of disquietude among ship owners, this might at any rate be a fitting moment for reconsidering a great deal of our merchant shipping legislation. Your committee think that the occasion has come when the question of the qualified reservation of British imperial coasting trade on the lines above indicated should be considered by the government with a view to reserving the British and colonial coastwise trade and the imperial coasting trade within the British empire to British and colonial ships, and to vessels of those nations who throw open their coasting trade to British and colonial ships. Your committee are of opinion that a special case exists for establishing direct British imperial communication with East Africa through the Suez canal by ships of up-to-date speed and accommodation, it being understood that any such subsidy should be granted for imperial considerations."

It is understood that the Ocean Steamship Co. of Savannah contemplates running a direct line from Boston to Savannah in the cotton trade. The City of Mempnis has just carried to Boston the largest cargo of cotton that ever left Savannah in the domestic trade.

OPPOSED TO THE EIGHT-HOUR DAY.

During the recent hearing in the eight-hour bill before the committee on labor of the house of representatives, President Henry G. Morse, of the New York Ship Building Co., Camden, N. J., opposed the passage of the bill for the following reasons:

"1. Under the proposed law we would either have to refuse to take government work or would be required to do merchant work on the same eight-hour basis, for the reason that it is impossible to operate a plant excepting on a uniform number of hours per day on each class.

"2. The cost of war ships built under such law would be fully 20 per cent. more than at present and would not result in any better work. We do not understand it to be the province of congress to give something for nothing.

"3. We have taken occasion to obtain the average price of labor in several of the ship yards of Great Britain and find that we are paying labor in this country an average of 33 per cent. more than is paid there. We have also investigated the cost of living and find that there is a very slight difference, from which we conclude that laboring men in this country under present conditions are very much better paid than in any other country, and any law which would tend to further increase this would be very detrimental to the shipping interests in this country and to the country at large in preventing exportation.

"4. It is desirable for the good of the country that conditions should be favorable for ship owners to have their ships constructed at home and that the money paid for ships should be retained in this country. At the present time the cost of iron and steel is more than 50 per cent. higher than in Great Britain or Germany. The cost of auxiliary machinery and outfit for ship averages from 15 per cent. to 50 per cent. more than in Great Britain and the cost of labor 33 per cent. more; the average cost of a ship today being from 35 per cent. to 40 per cent. more than in Great Britain and Germany. It would therefore seem to be against the interests of the ship owner, the shipbuilder and the country at large to pass any law which would still further increase the cost of ships.

"5. About four years ago the cost of material and labor was such that it was deemed probable that a yard built on modern principles, with all possible labor saving devices, might be able to construct ships in this country at a cost of not more than 15 per cent. above the cost of foreign ships, and it was deemed probable that the owners of ships would be willing to pay this additional cost. With this belief the stockholders of the New York Ship Building Co. have expended during the last four years nearly $10,000,000, and have produced a plant which is credited with being the most fully equipped of any in the world, and under normal conditions would be able to build ships at a cost not exceeding 15 per cent. to 20 per cent. above foreign-built ships. At the present time the conditions are abnormal, both as regards labor and material, and any action on your part looking to the furtner increase of cost would be detrimental to the best interests of the country at large.

"6. Labor is receiving in the shipyards as much pay as in other classes of manufacture; otherwise, it would not be employed in these busy times in constructing ships, but would seek other employment; therefore you should pass no law which is detrimental to a particular industry at a time and under conditions when no hardship has been imposed upon any class by the conditions now prevailing in the shipyards.

"7. The writer believes that this effort to pass an eight-hour bill for certain classes of work emanates from the representatives of the labor organizations of the country, who hope by the passing of this bill to embarrass the shipbuilding companies and eventually to force them to an eight-hour per day basis, with the hope that this may sooner or later prevail in all branches of manufacture. Should their hopes be realized the cost of all that we have to export from this country would increase from 20 to 25 per cent. and the possibility of exporting would be effectually prevented. No individual increases his wealth by consuming all he produces; the same is true of the country at large. The wealth of this country came from our being able to dispose of more of our products than we consumed. Why should you take action to prevent shipbuilders from following in the steps of other successful manufacturers?

"We presume that all members of congress understand that labor expects to earn as much in eight hours as it now does in ten. The navy yards of the country are working on an eight-hour basis and are paying fully as much per day of eight hours as the manufacturers do for a ten-hour day."

UNION STEEL MINORITY OFFENDED.

It appears that some of the stockholders of the Union Steel Co. are not at all pleased with the terms of the purchase of the properties by the United States Steel Corporation. Mr. George W. Darr, president of the Sharon Steel Co., said: "The United States Steel Corporation can consider itself fortunate in securing such a valuable property at such a low price. The Union Steel Co. is worth a great deal more than the Steel Corporation paid for it, and it was because of the low figure set upon the property that I opposed the transfer. I asked permission to remain in the company on a basis of the price at which it was taken over. The net earnings of the Union Steel Co. at the present time far exceed the amount required for the payment of interest on the bonds. Earnings, of course, will increase with the advancement of the work involving the construction of new plants, which were planned by the Union Steel Co., and which will be completed by them under the terms of the deal. Three new furnaces, with a combined capacity of 2,400 tons daily are now under construction, thus giving the Union Steel Co. five furnaces, with a yearly capacity of 800,000 tons. The sheet and tube mills now under construction at Sharon will be started some time next month. The acquisition of the Union Steel Co. will benefit the United States Steel Corporation in many ways. In the first place the purchase will obviate the necessity of adding to the capacity of certain of the old constituent properties of the corporation. The new tube mill of the Sharon Co., which will go into operation next month, will give the Steel Corporation an additional capacity of 350 tons a day. The same can be said of the new sheet mill and other plants that are now in operation or in course of construction. The purchase makes the Steel Corporation's position impregnable from the standpoint of iron ore. It now controls fully 85 per cent. of the iron ore of the Mesabi range. The deal adds 50,000,000 tons to its visible supplies. Then, again, the acquisition will increase the furnace capacity of the combine by 2,400 tons daily, thus obviating the necessity of laying out so much money for new furnace construction. The present pig iron production of the corporation is not sufficient by many thousand tons to meet the requirements of its finishing mills."

SHIP BUILDING AT NEWPORT NEWS.

Six new vessels will be launched at the works of the Newport News Ship Building & Dry Dock Co., Newport News, Va., during 1903. The Pacific coast lumber steamer Francis H. Leggett will be launched the middle of January. The large armored cruisers Marvland and West Virginia will be put overboard in May, possibly on the same day. The battleship Virginia, the protected cruiser Charleston and the Saginaw Steel Steamship Co.'s 10,000-ton oil steamship will be in the water before the close of the year. The yard expects to secure some important ship contracts in 1903, among them one of the two new armored cruisers to be awarded by the navy department in January. The last twelve months saw the launching of the battleship Missouri and the Old Dominion steamship Monroe, and the completion of the Pacific Mail's 18,600-ton leviathans Korea and Siberia, and the United States monitor Arkansas. Keels were laid during the year for the battleship Virginia and the cruiser Charleston, for the government, and the Monroe, the Leggett and the oil steamship. The keel for the new battleship Louisiana will be laid about Feb. 1. The battleship Missouri will have her builder's trial in May or June, and will soon after have her official trial. She will be commissioned the latter part of the year. A number of improvements have been made at the ship yard in the last year, the office building being doubled in size, the machine and joiner buildings being extended, a new galvanizing plant being erected and work being started on a large new ship shed and mould loft.

MANAGEMENT OF ATLANTIC COMBINATION.

It has been announced that the steamers of the Atlantic Transport Co. will go in the future to Southampton, instead of to London, thus saving sixteen hours. It is the intention of the International Mercantile Marine Co. to separate entirely the passenger and freight departments of the different lines. As soon as practicable the passenger business of all the lines will be concentrated at the present office of the International Navigation Co., at No. 71 Broadway, and the freight business at the present office of the White Star Line in the Bowling Green building. Mr. Clement A. Griscom, president of the company, will have entire charge on this side of the water, while Mr. W. J. Pirrie, vice president, will have charge in Europe. Mr. James A. Wright, jr,. will have charge of the passenger business, as chairman of the passenger board, while Mr. Samuel Bettle will be in charge of the East bound freight business, as chairman of the traffic board, and Mr. A. Curten Fetterolf will be assistant chairman of the latter board. Mr. C. A. Griscom, Jr., will be the responsible head of the American and Red Star Lines, while Mr. P. A. S. Franklin will be the responsible head of the Atlantic Transport Line in the United States, and Mr. Charles F. Towey in England. Mr. Henry Wilding will be the head of the Dominion and Leyland Lines, while Mr. J. Bruce Ismay and Mr. Harold Sanderson will be at the head of the White Star Line.

Bills are at present in both houses of congress to create the new department of commerce. The senate bill makes the new department a vast affair; the house bill is more modest in its transfer of bureaus. Secretary Cortelyou, who has been selected for the new office, is in favor of a small department at first. He believes that the new department would thrive better if it did a little work and did it well than if it undertook to give form to a vast mass of undigested matter. At present no outline of the new department can be given other than that all departments will contribute bureaus to it. Bureaus having to do with commerce are pretty well scattered throughout all of them. There is no doubt that in time the department of commerce will be the most influential post in the cabinet.

CROWDING THE TWENTY-EIGHT MILLION MARK.

Shipments of Iron Ore by Lake during 1902 foot up 27,039,169 gross tons —Rail Shipments and an output of 298,420 tons from the Clergue Canadian Mines will bring the grand total close to 28,000,000 tons.

Final returns regarding iron ore shipments by lake for 1902 show an aggregate of 27,039,169 gross tons. This does not include 298,420 tons shipped from the Clergue mines at Michipicoten in Canada. Neither does it include the shipments by rail to furnaces near the mines, which are estimated at about 450,000 tons. These two items will bring the grand total close to 28,000,000 tons. This is more ore than was produced in the thirty-one years between 1855 and 1885 inclusive. It is nearly three times the output of 1896—seven years ago. It represents an increase of about 35 per cent. over last year. Continued prosperity in the iron and steel trades is, of course, the principal cause for this big output, but a long season of navigation has also had much to do with it. The vessels loaded ore in the first days of April and a few cargoes going from Escanaba to South Chicago were loaded as late as Dec. 22. Thus the season was strung out over practically nine months.

The principal gains over previous years are again at the ports through which ore is shipped from the great open pit mines of the Mesabi range. Duluth shows a gain over last year of 2,160,453 tons and Superior a gain of 1,859,491 tons. A gain of 1,391,036 tons in the shipments from Escanaba would indicate that some of the old-range mines have been worked to their fullest capacity. Shipments from the several upper lake ports during five years past are shown in the following table:

	1902.	1901	1900.	1899.	1898.
Escanaba..	5.413,704	4 022 668	3.496.734	3 720 218	2 803 513
Marquette	2.595,010	2,354.284	2 661 961	2 733 596	2 245 965
Ashland	3 553 919	2 836,252	2,633 687	2 703,447	2 391 088
Two Harbors	5 605 185	5 018 197	4 007,294	3,973,733	2 693.245
Gladstone	92 375	117 039	418 854	381 457	335 956
Superior	4 180.568	2 321 077	1,522 899	878.942	550,403
Duluth	5,598.403	3.437.955	3,888,986	3,509,965	2,635.262
Total, by lake	27,039,169	20,157,522	18,570 315	17,901.358	13,655,432
Total, all rail		431,715	489,078	350 446	369,241
Total shipments.		20,589,237	19.059,393	18,251,804	14,024,673

IRON ORE ON LAKE ERIE DOCKS.

Reports from all Lake Erie docks show that of the total output of 27,039,169 tons of ore by lake they received 22,649,424 tons and had a balance on dock Dec. 1 of 7,074,254 tons. In 1901 they received 17,014,076 tons and held a balance Dec. 1 of that year of 5,859,663 tons. The present balance does not, therefore, appear large when compared with last year, and in view of the increased receipts. The amount of ore at the furnaces is, however, an unknown quantity, and not much can therefore be said now of the outlook from the standpoint of stocks. If the demand for iron and steel that has crowded the furnaces and mills of the country for a couple of years past keeps up during the winter there is no danger of a great surplus of ore in the spring, but any slump in this great industry would very probably be far-reaching, and the developments of the next few months will therefore have special attention from the vessel interests.

The proportion of direct shipments of ore to furnaces over the Lake Erie docks is again very large. Shipments to furnaces between May 1 and Dec. 1 of this year aggregate 18,423,364 tons, compared with 14,204,596 tons in 1901, 11,613,773 tons in 1900, 11,765,158 tons in 1899 and 9,058,829 tons in 1898. It will thus be seen that the direct shipments have more than doubled since 1898.

The shipments to furnaces during the navigation season above referred to are determined in this way: First we have the amount of ore on Lake Erie docks before the opening of navigation on May 1, last, 2,848,194 tons: add to this the receipts of the season just closed, 22,649,424 tons, and the total is 25,497,618 tons; deduct the amount now on dock, 7,074,254 tons, and we have 18,423,364 tons as the amount that was forwarded, either direct or from dock, to the furnace yards.

It is understood, of course, that the difference between the output of 27,039,169 tons from the mines and the receipts of 22,649,424 tons at Lake Erie ports, is ore that went to places other than Lake Erie ports, principally the furnaces at South Chicago.

The following tables show receipts at Lake Erie ports and amounts on dock during five years past:

IRON ORE RECEIPTS AT LAKE ERIE PORTS, GROSS TONS.

Ports.	1902.	1901.	1900.	1899.	1898.
Toledo.	1,037,571	798 298	645,147	792,348	414.012
Sandusky	165.556	33,017	154.542	87 499	136,200
Huron	520.646	431.311	321 914	263 600	126,755
Lorain.	1.442.417	721.662	1.030,235	1 112.946	536.086
Cleveland	4,873.318	3,831,080	3,376,644	3,222,582	2,645,318
Fairport	1,538,744	1.181,776	1 085,554	1,241 013	912.879
Ashtabula	4,796,805	3,981,170	3,709,486	3.341,526	2.684,563
Conneaut	4,300,301	3,181,019	2,556,631	2.320,696	1,404,169
Erie	1,717.268	1,379,377	1,240.715	1,209.961	1,092,364
Buffalo Tonawanda	2,256,798	1,475,386	1,616,919	1,530,016	1 075,975
Total	22,649,424	17,014,076	15,797,787	15,222,187	11,028,321

IRON ORE ON LAKE ERIE DOCKS, DEC. 1, GROSS TONS.

Ports.	1902.	1901.	1900.	1899.	1898.
Toledo.	310.023	254,196	242,375	186,422	146.563
Sandusky	95,175	47,384	95,111	23,184	48,500
Huron	232,764	231,501	211.377	164,480	139,982
Lorain	328,304	195,863	251,838	337.822	324,034
Cleveland	1,500,601	1,378,060	1,337,445	1,200,806	1.175,970
Fairport	921,236	710,590	611,717	692 147	719,794
Ashtabula	1.967,136	1,769,145	1,811.459	1,902,598	1,732 671
Conneaut	6 [illegible] 9	601,103	620 514	468,203	288,101
Erie	722,966	470.718	480,734	361,335	439.167
Buffalo	319,367	198,100	232,100	192,681	121,620
Total	7,074,254	5,859,663	5,801,670	5,530,283	5,136,407

CARGO RECORDS OF LAKE FREIGHTERS.

It was expected that some of the cargoes of coal taken late in the season of navigation just closed by vessels of the Steel Corporation fleet would exceed the record cargoes of last year. Such is not, however, the case. The largest soft coal cargo of the past season, 7,659 tons, was loaded at Lorain by the steamer John W. Gates, and the largest anthracite cargo, 6,838 tons, at Buffalo by the steamer Superior City. Both of these were below the records. The record cargoes of ore, grain and coal, revised to date are:

Iron ore—Steel tow barge John Smeaton, owned by Pittsburg Steamship Co., A. B. Wolvin of Duluth, manager, 7,652 gross or 8,570 net tons, Two Harbors to South Chicago; steamer Isaac L. Elwood, Pittsburg Steamship Co., A. B. Wolvin of Duluth, manager, 7,642 gross or 8,559 net tons, Two Harbors to Conneaut.

Grain—Steamer S. J. Murphy, Donora Mining Co., Duluth, 269,000 bushels of corn, equal to 7,532 net tons, South Chicago to Buffalo; steamer Douglas Houghton, Pittsburg Steamship Co., A. B. Wolvin of Duluth, manager, 308,000 bushels of clipped oats and 60,000 bushels of corn, equal to 7,520 net tons, Manitowoc to Buffalo.

Coal—Steamer I. L. Elwood, owned by Pittsburg Steamship Co., A. B. Wolvin of Duluth, manager, 7,688 net tons anthracite, Buffalo to Duluth; steamer I. L. Elwood, Pittsburg Steamship Co., A. B. Wolvin of Duluth, manager, 7,388 net tons of bituminous, Cleveland to Duluth.

TWO MORE BIG LAKE FREIGHTERS.

It has been known for three or four weeks past that the American Ship Building Co. had on its books an order for another large freighter, and that the vessel was to be built at Detroit. Further particulars were not given out until a few days ago, when it was announced that the vessel is for Mr. A. B. Wolvin, trustee, and is to be 448 ft. keel, 50 ft. beam and 28 ft. depth. She will have triple-expansion engines and Babcock & Wilcox water-tube boilers.

The American company has also taken an order from M. J. Commings of Oswego, for a large freighter. This vessel will also be built at Detroit and will be a duplicate of the steamer Moses Taylor of the Mitchell fleet, which came out this season. Her dimensions will be 416 ft. keel, 50 ft. beam and 28 ft. depth. She will have triple-expansion engines and Scotch boilers.

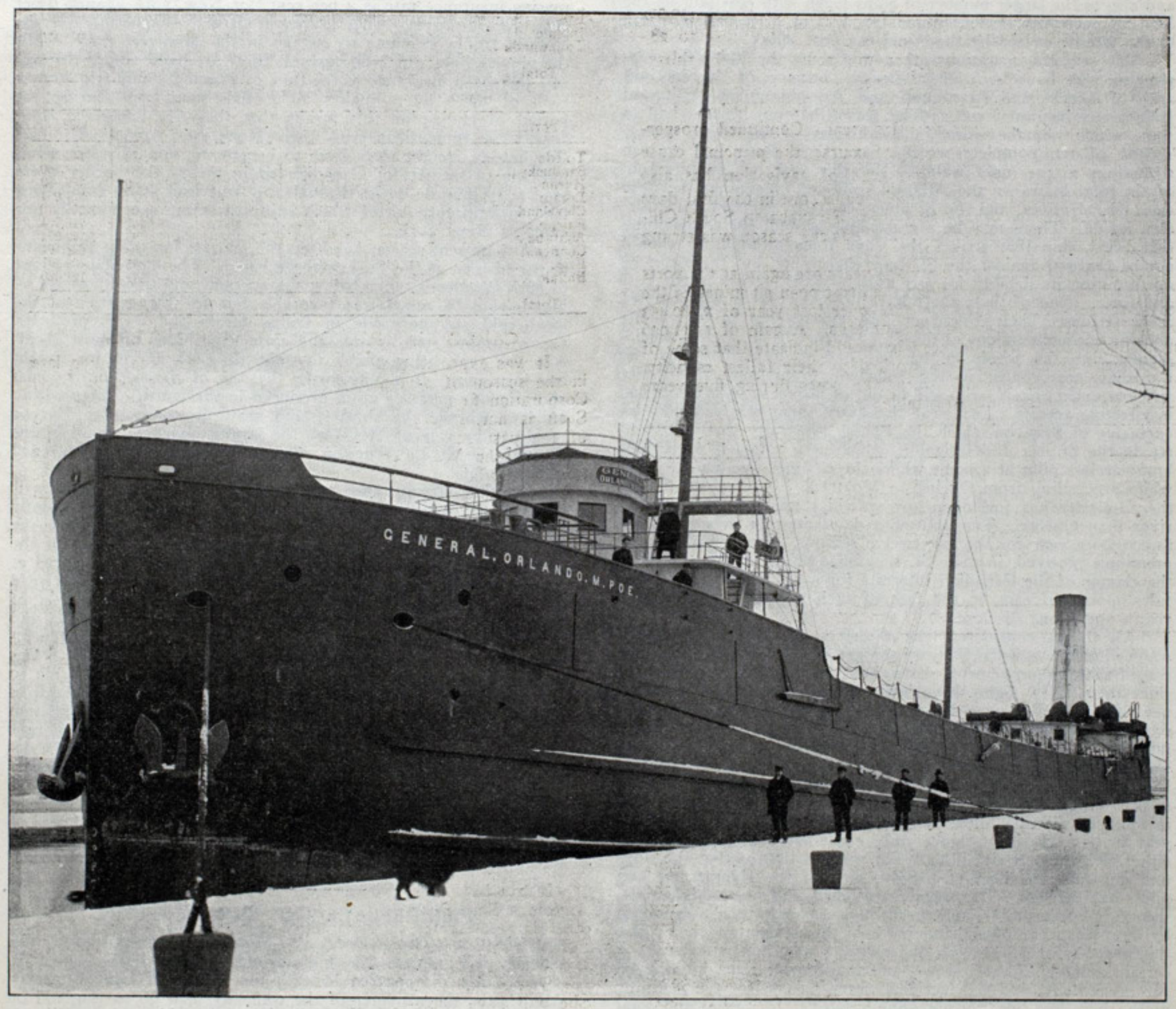
Dividends are getting to be an old story with the American Ship Building Co. Announcements of dividends come often now that the common stock as well as the preferred seems to be upon a permanent dividend basis. The executive committee of the company met in Cleveland on Wednesday last, and declared the usual dividends of 1¾ per cent. on preferred shares. It is payable Jan. 15 to stockholders of record at the close of business Jan. 5. Books close Jan. 5 and will be reopened Jan. 15.

LAKE ERIE AND OHIO RIVER SHIP-CANAL.

The old bill to incorporate the Lake Erie & Ohio River Ship Canal Co., to define the powers of the company and to give it certain rights has been introduced again in the house of representatives at Washington. This time its sponsor is Representative Dalzell of Pittsburg. The bill authorizes the construction of a canal from Pittsburg along the Ohio river to Beaver, Pa., from Beaver along the Mahoning river to Niles, O., then across the state of Ohio to the most convenient point on Lake Erie between the mouth of the Green river and the state line between Pennsylvania and Ohio. There is also authority for two branch canals from Niles and the mouth of the Chenango river. The promotors of this bill represent that it will permit lake steamers to enter the heart of the manufacturing district with their loads. The bill provides that the canal shall have a minimum depth of 15 ft. and the standard cross section of 2,000 sq. ft., that the locks shall have a minimum length of 340 ft. and a minimum width of 45 ft., and that the total lockage between the Ohio river and the lake shall not exceed 600 ft.

The Review does not wish to discuss this bill whose nature seems to be perennial, but merely observes that unless the canal leads directly to the furnaces no object whatever would be gained in constructing it, since, doubtless the sole object of its construction is to avoid transhipment of freight. The minimum dimensions of the locks are not sufficient to permit of the passage of the larger and more economical class of carriers, and even if they were, it is doubtful whether a large carrier would be willing to take the time to thread its way along a canal of such enormous length. The incorporators named in the bill are:

George A. Kelly, B. F. Jones, Thomas P. Roberts, John E. Shaw, William Flinn, William M. Kennedy, Morrison Foster, W. L. Scalfe, W. Harry Brown, D. E. Park, James H. Park, John A. Wood, Eugene M. O'Neill, James F. Hudson, H. J. Heinz, S. S. Marvin, D. P. Black, George H. Anderson, William P. Herbert, A. J. Logan, John Eaton and F. J. Hearne of Pittsburg, W. S. Shallenberger of Rochester, Pa.; J. G. Butler, jr., of Youngstown, O.; Simon Perkins of Sharon, Pa.; J. R. Harrah of Beaver, Pa.; and A. B. Fleming of Fairmount, W. Va.



The Last Locking of 1902 at Sault Ste. Marie, December 16.

NEW CANADIAN SHIP YARD TALKED OF.

For some months past there has been talk of a new ship yard on the Canadian shore of the great lakes in which the Bertrams of Toronto were to be interested. Nothing definite was ever learned about it however. The stories are now revived with Canadian Pacific backing. It is represented that the Canadian Pacific wants a fleet of steamers on the great lakes to compete with the Great Northern and other liners and is to assist the Bertrams in establishing a plant to cost approximately $1,000,000. While several sites have been mentioned for the plant the one most spoken of is at Sandwich, Ont., on the Detroit river. It is stated that plans have been completed, even in detail for the proposed plant. The ship yard when established is to have a complete engine and boiler plant and dry dock for repair work. No authentic statement has been secured as yet, either from the Bertrams or the Canadian Pacific officials.

W. C. Farrington, vice president of the Northern Steamship Co., has tendered his resignation to take effect Dec. 31. He has accepted the position as general manager of the Atlantic coast division of the Southern Pacific's fleet of steamers. Mr. Farrington has been connected with the Great Northern railway and Great Northern Steamship Co. for the past eighteen years. It is rumored also that Mr. J. H. Torney, formerly marine superintendent of the Northern Steamship line, will go with Mr. Farrington.

ST. LAWRENCE SEASON AGAIN UNSATISFACTORY.

A St. John's (N. F.) dispatch says that the season of navigation just closed on the St. Lawrence river and gulf has proved to be unsatisfactory. The season just closed has been relatively more favorable in the sense of increased commerce and fewer wrecks than its predecessor, but still there is bitter lamentation in Canadian commercial circles over the failure of the port of Montreal to do the business which its advocates contend it should. The following figures exhibit the situation:

Year.	Vessels.	Tons.
1898	516	1,212,747
1899	434	1,092,955
1900	416	1,038,234
1901	396	988,073
1902	411	1,063,175

These figures tell of the arrivals of steam vessels at Montreal during the season, and it will be observed that between 1898 and 1901 there was a decline of 25 per cent. in ships and tonnage. The improvement this year is not a genuine one, being due to the return to the service of some boats taken over by the British government for troop purposes in South Africa during the war, and also to the larger number of ships laden with coal sent up the St. Lawrence with the bituminous product of Nova Scotia owing to the famine caused by the American coal strike.

The season's operations are admitted by the Montreal shipping men to have been unsatisfactory, because of the continuance of wrecks and strandings, and the consequent raising of freight and insurance rates. The season has not been as bad as 1901, which was the worst in the history of the route, with a record of ten complete wrecks near Cape Race and sixteen strandings in the inner waters. But this year has had its sum of six total losses on the Atlantic seaboard (including the Grecian, near Halifax, and the Blaamenden, near Sydney), and thirteen inside. There may be a reasonable ground for complaining that every ship that strikes the Cape Race promontory should not be charged against the St. Lawrence route, but there can be no disputing its liability for any mishap which occurs in the gulf and river. And of these there have been thirteen in all, some of them serious. Their frequency and gravity has taxed all the docking accommodations of the St. Lawrence basin, and an official inquiry into the whole matter has had to be ordered by the Canadian government in the endeavor to reassure the panic-stricken underwriters, who will be out of pocket at least $1,800,000 in effecting repairs. Last year these cost them nearly $3,000,000, exclusive of $125,000 which the British admiralty had to pay to repair the cruiser Indefatigable, which was rammed on a reef by a careless pilot at a point where the channel was 600 ft. wide, while proceeding from Quebec to Montreal. As a result of this, the admiralty has forbidden any warships going further up the river than Quebec. The underwriters assert that they have lost $1,000,000 a year for the last twelve seasons, over and above the premiums received, in their St. Lawrence business, and therefore the clamor of the Canadian interests for a reduction in the rates falls upon deaf ears, in the face of such a casualty list as this year's operations disclose.

All things considered, the disasters of 1902 in the inner waters indicate a worse state of things than last season's, because considerable improvements have been made to the coast aids since then. New lights have been erected, new sirens installed, new buoys located, new land marks provided. Mr. Tarte, the recently resigned minister of public works in Canada, was indefatigable in his efforts to remove from the Dominion's chief waterway the stigma under which it suffered, while Mr. Sutherland, the minister of marine and fisheries, was equally earnest in providing extra safeguards for the benefit of navigators. Yet, in spite of all this, there are almost as many groundings this year as last, a circumstance only explainable in three ways—either that these coast aids are not trustworthy, or that the tides and currents set them at naught, or that the shipmasters and pilots are careless. The former argument will not hold, but the second has some force, and the third has been proved substantial by more than one official inquiry held this season and last. But this plea has no effect with underwriters or others interested; a certain amount of carelessness and indifference must be allowed for everywhere, and the fact that every season, for ten years or more, there has been an appalling catalogue of partial and total wrecks in those waters, call for some more cogent reason than that. The fact is, and it has been strongly impressed upon the Canadian authorities, that a hydrographic survey is absolutely necessary of the gulf and river waters, with new charts, soundings and other detailed information, the present charts being based not so much upon actual official investigation, as upon the data supplied, in a great measure, by the fisherfolk living along that seaboard.

To perfect the St. Lawrence route would mean an expenditure of $5,000,000, spread over, say, five years. Of this the major sum would be required to widen the channel in the river from 500 to 600 ft., and deepen it from 25 to 30 ft. New York is now preparing for a 40-ft. channel and the large modern liners draw all of 30 ft., so that even if the fast Canadian line were started the steamers could not get beyond Quebec. But no sane man would send ocean greyhounds speeding through the St. Lawrence waters until the lighthouse system from the Grand Banks to the Montreal docks is completely modernized, and the pilotage system, which is perhaps the chief defect in Canada's maritime business, is transformed. The Newfoundland government has always been willing to do its part in improving the lights, whistles and buoys on the danger zones of its coast line, and this summer has installed a powerful siren at Powell's Head, near Trepassey in the Cape Race region. But it is essentially a matter for Canada's co-operation, inasmuch as most of the shipping is Canada's, but the dominion government is unwilling to undertake the expenditure of the immense sum necessary to bring its coast aids up to date. The strange feature about it is that the losses in hulls and cargoes the past two years more than total the cost of meeting every suggestion put forward as to improving the navigation of the route from the high seas to the shallows, safeguarding both the Belle Isle and Cape Race approaches, and so studding the inner waters with beacons that only the grossest carelessness could bring about disaster, and instituting a condition of things that would recoup the dominion in a few years for its outlay in the increased business it would bring to the route.

But because the losses through the St. Lawrence mishaps fall upon the British underwriters, the Canadian government is slow to act. At the same time, however, the ultimate consequence is an injury to the route and to Canada's business. The marine insurance rate is 4 per cent. for New York against 9 per cent. for Montreal. This makes it virtually impossible for the cheaper tramp steamers to engage in the Montreal trade, while the regular lines which do business there are handicapped through this increased insurance to the tune of $5,000 a round trip, and as each of these liners makes about five such trips during the period of navigation this means that they are hampered some $25,000 in comparison with their New York rivals. To meet this burden freight rates have to be put up, and this fact sends millions of bushels of Canadian grain across the border every season, seeking an outlet through the American ports, from Portland to Baltimore, all of which enjoy the same exceptionally low rates as New York.

The present season has been the poorest for grain shipments in the history of the St. Lawrence route. The aggregate volume of such cargoes is much below the average, and the export showings would be much less favorable but for the growth of the local cold storage trade in fruits, meats and dairy products. Coarse grains, such as peas and corn, have fallen off most decidedly this year, being unable to stand the high figures for freight and insurance. It is noteworthy that out of 200,000 bu. of wheat and as many more of grain produced in the United States within an area whence the shortest and most direct route to Europe would be by way of Montreal, the largest shipment of all grains through the St. Lawrence in any one season has never exceeded 40,000,000 bu.

Another circumstance contributing to this state of affairs is that the navigation of the river closes so early and so abruptly that the western grain cannot be got to tidewater before the St. Lawrence freezes. The elevator accommodation, too, for the storage of grain is utterly inadequate, else it could be stored at cheap rates for the winter, enabling western handlers to forward it there and hold it until the return of spring, when a fleet of freighters could load it, if insurance rates were reasonable, and carry it on to market. But as it is, the heavy rates and the inadequacy of storage compel shippers to route it by United States ports all through the winter, and not alone is American grain so forwarded, but much of the product of the Canadian northwest also goes that way. The result must be that as the population and acreage of the northwest grow and the grain yield enlarges the present congestion at Montreal must be intensified and the demerits of the St. Lawrence route become correspondingly apparent, unless improvements of the most comprehensive character are set on foot without delay. But even with such reforms, the feasibility of the St. Lawrence as an ocean highway for fast liners of the latest type is a matter which admits of considerable question, in the light of this season's wrecks and strandings.

WILL REPLACE THE BANNOCKBURN.

Kingston, Ont., Dec. 23.—Montreal Transportation Co. officials will replace the big steamer Bannockburn, which so mysteriously disappeared beneath the waters of Lake Superior. Mr. Cuttle, the manager of the company, will go to England on business connected with the company and while there will visit Scotland and place an order for another big steel grain freighter. While details have not yet been given out it is about certain that the new vessel will be ready for service for next season, will be entirely of steel with triple-expansion engines and all modern equipments. The steamer is likely to be practically a duplicate of the Bannockburn or the Rosemount. This company has been somewhat unfortunate this season. The steamer Glengarry only lately sank at the Kingston dock. She contained 300 tons of Welsh coal for Toronto, but the lateness of the season prevented forwarding by boat. However, as the vessel sank in but 14 ft. of water, she will be pumped out without much loss.

A Marquette dispatch says it is reported in the Lake Superior mining country that the Steel Corporation has purchased the Champion mine, one of the oldest of the hard ore properties of that vicinity.

AROUND THE GREAT LAKES.

Capt. Dionne of the Two Rivers life saving station has been promoted, and will soon be transferred to Sheboygan to take charge of the station there.

Capt. W. Macgregor, formerly of Detroit, and well known in the lake trade, died last week at Seattle, Wash. He went west in 1889 and commanded steamers in the Alaska trade.

Capt. John Flynn, Duluth agent for the Lake Michigan & Lake Superior Transportation Co., has resigned to go with the Great Lakes & St. Lawrence River Transportation Co., commonly called the Quebec route. Capt. Flynn had been agent at Duluth since 1880.

The lowest bid received by Capt. Gaillard, government engineer at Duluth, for supplying Portland cement for the harbor at Duluth was from the Illinois Steel Co., for $115,050. This is the exact amount of the allowance. All other bids were in excess of the amount.

The lake-built schooner W. D. Becker, which was operated on the coast by the Boutell Transportation & Towing Co., has been sold to New York parties for $25,000. She went to the coast three years ago. The Boutell company still has the schooners Anna M. Ash and John C. Fitzpatrick.

During the season of 1902, 4,829 vessels entered the port of Buffalo, of which 3,523 with a tonnage of 5,214,284 were coastwise and 1,306 with a tonnage of 562,943 were foreign. The total number of vessels cleared was 4,912, of which 3,682 with a tonnage of 5,376,573 were coastwise and 1,230, with a tonnage of 455,610 were foreign.

The season of interlake navigation during the present year was for a period of 254 days. It opened March 29 and ended Dec. 18, when the steamers John W. Gates and Gen. O. M. Poe reached Duluth. The first interlake vessel to depart from the head of the lakes last spring was the steamer B. F. Wells. She cleared for Lake Erie with ore and loaded at Two Harbors.

The lake-built steamship Minnetonka, which sailed from Newport, England, to Boston with a cargo of coal was reported in distress off Halifax with her steering gear disabled. The Dominion liner Colonian took her in tow for twelve hours when the hawsers parted and the Colonian was forced to proceed without her. Nothing has been heard from the Minnetonka since though it is not considered that she is in danger.

Garret G. Stewart of Algonac died last week. He was a pioneer of the village and one of its most prominent inhabitants. When he was a young man he sailed on the lakes but abandoned that calling many years ago. He was the father of thirteen children, ten of them being boys. Four of the six boys now alive are lake captains. They are Capt. A. E. Stewart of Detroit, Capt. Nathaniel Stewart of Algonac, Capt. Fred Stewart of New Baltimore and Capt. Walter Stewart of Leslie, Mich.

Capt. Henry Leish, of the steel steamer America reports a new rock or shoal spot in the Sault river. His vessel has been subjected to a repair bill on account of it. She damaged three plates and one frame in her bottom. Capt. Leish says that while bound down the Sault river, directly on the middle Hay lake range, drawing 18 ft. of water, and while running between the two nine-mile north buoys (one red and the other striped) his vessel ran over a rock. He is of the opinion that the rock might not be more than half a foot in diameter, on account of the peculiar damage inflicted.

The little schooner Charles Luling is wintering at Detroit with a cargo of coal. Her last trip was full of peril. She left Cleveland in a gale and ran before it until Kelley's island was reached, when she rode it out. At this point the first danger presented itself, because she began to drift and before the captain knew it he was dangerously near the shore. A blinding snowstorm made it impossible for the captain to get his bearings. She was towed back into the lake by a tug. When within 10 miles of Bar point she became stuck in the ice. She drifted about and ran into Pidgeon bay. A clear stretch of water was then found and she sailed past Amherstburg. She tried to follow in the wake of a steamer but was unable to do so and a tug towed her to Detroit. Her cargo of coal is for Port Huron parties.

A New York dispatch announces that it can be stated with certainty that the leaders of the Republican party have agreed that the inner or Buffalo canal route will be the one recommended to the legislature. It is understood that provisions will be made for the improvement of the Oswego and Champlain canals which will be satisfactory to everybody interested in those waterways and that the canal interests will be united generally in their support of the bill which will be introduced. The plan is to submit the whole question of canal legislation to the people. It is estimated that the cost of improving the state waterways under the project in contemplation, that is a 1,000-ton barge canal, will be in the neighborhood of $80,000,000. The plan which Gov. Odell has in mind for carrying out this great improvement is to raise enough money by indirect taxation to pay the interest on the canal bonds and to gradually extinguish them.

The Canadian Pacific railway has issued a statement showing the wheat shipments by lake from all elevators at Ft. William and Port Arthur for the seasons of navigation 1902-1901. The total of shipments from Canadian ports was 22,051,144 bu., against 9,662,097 last year, an increase of 12,389,047 bu. To United States ports the figures were 13,474,654 bu., against 5,711,785 last year, an increase of 7,762,871 bu., making the total shipments of Canadian wheat 35,525,796 bu. from April 11 to Dec. 5, 1902, against 15,373,880 from April 30 to Dec. 5, 1901, or a total increase of 20,151,918 bu. The amount carried by Canadian vessels to Canadian ports in 1902 was 22,051,144 bu., an increase of 12,389,047 bu. and by United States vessels to United States ports 12,010,803 bu., an increase of 6,405,520 bu. There were 23,514,995 bu. shipped by Canadian vessels, an increase of 13,746,980 bu., and 12,010,803 by United States vessels, an increase of 6,405,520 bu. over last year.

A sad circumstance of the imprisonment of the schooner Belle Hanscomb, in Pigeon bay between Bar Point and Colchester, was the drowning of a member of the crew. John Leehy, a seaman, was drowned while making his way from the shore to the stranded boat with provisions. The Hanscomb and Spademan left Cleveland in tow of the steamer S. K. Martin and had nearly reached the mouth of the river when ice was encountered in such quantities as to tie them up completely. The Hanscomb's provisions ran out entirely and a number of the crew started for shore over the ice on foot. The shore, which was about a mile distant, was reached in safety, but on the return trip Leehy stepped into an air hole and it was the last seen of him. He must have come up under the ice, out of reach and sight of the others. The drowned man was a Newfoundlander, but made his home in Cleveland for the past two or three years. Nothing is known of his family, except that he had relatives somewhere in Newfoundland.

The first of six freight steamers which the American Ship Building Co. has under way for Capt. W. W. Brown of Cleveland and his associates in the United States Transportation Co. will be launched at South Chicago Saturday, and will be named George B. Leonard. There will be several Smiths in the lake fleet when these vessels go into commission. Mr. L. C. Smith of Smith-Premier typewriter fame is a large stockholder with Capt. Brown, and this probably explains the repeated use of the name for the vessels. Names selected for the six new steamers are Hurlbut W. Smith, Monroe C. Smith, B. Lyman Smith, Wilbert L. Smith, George B. Leonard, Charles M. Warner. The four Smiths are building at the Lorain yard and the Leonard and Warner at South Chicago. The Hurlbut W. Smith will have elaborate quarters in a forward house for the accommodation of directors of the company. Plans provide for a large parlor, five sleeping rooms and two bath rooms. With five large steamers already in commission this company will have a fleet of eleven modern freighters next season, ranging in capacity from 5,200 to 6,200 tons. The five that came out within the past season are the L. C. Smith, Wm. Nottingham, Horace S. Wilkinson, W. W. Brown and A. G. Brower. Capt. Brown will also have under his direction next season the large steel freight steamer John B. Cowle, just completed at works of the Jenks Ship Building Co., Port Huron, and the wooden steamer Geo. Presley, which he has managed for a long time past.

The history of Capt. William Dana who is one of the oldest masters on the great lakes is quite interesting. He was born at Montezuma, New York, in 1812. Like the typical youth he ran away from home when he was twelve years old to go sailing. Charles Howard, then of New York state, but later mayor of Detroit, found him a place on the brig Edgerton Clips as cabin boy, he receiving $4 per month as wages. Later he worked as cook of several small schooners running from Oswego to Kingston, his wages being $8 per month. He thought he would try sailing on the other lakes, where better pay was given. He went to Buffalo and shipped on the Detroit, with Capt. James Lumby. He was then about seventeen years old. The captain needing a pilot for Lake Ontario, he offered his services, but was laughed at when he offered himself. However, they gave him a trial and found he could navigate anywhere on Lake Ontario, and they made him a present of $10 besides his other wages, which were then $15. He next sailed with Capt. Bush as mate and pilot, stayed the following winter with the captain in Cleveland and went to school. The next year he sailed the schooner Betsy. He sailed four or five other schooners and finally bought half of the schooner Clyde, sailing her a short time after, and built the schooner Charles Howard which he named after his first friend. After he sold the Howard he built the Luther Wright, the first three-masted schooner on the lakes. He was very proud of this boat, as she was very pretty and attracted a great deal of attention wherever she went. He took a load of coal from Lake Erie to Chicago, then a very small place, and they had to pull up the creek by running a line, there being no tugs. From Chicago he went to Michigan City and got a cargo of corn for Ohio. After selling the Luther Wright he went into tugs, with which he towed schooners over the flats, boats then going by the north channel. The first tug was named the O. M. Hyde. He says he named her after one of the best friends he ever had. He spent about forty years in tug boats, but for the last twenty-five years he has not sailed at all, though he loves a boat as dearly as ever. His sons are Capts. Douglass, George and Frank Dana of Algonac.

CONDITIONS GOVERNING POWER CANAL.

Washington, D. C., Dec. 24.—A copy of conditions upon which the secretary of war approved the plans of the Michigan Lake Superior Power Co. and consented to the diversion of water from the St. Mary's river, as authorized by the river and harbor act of June 13, 1902, has just been secured from the war department, and is as follows:

1. That the regulating works, including escape valves at power house, controlling works, and remedial works, shall be operated under the inspection of the engineer officer in charge of the St. Mary's Falls canal, who shall have access to them at all times.

2. That when the mean level of Lake Superior at the canal for any calendar month falls below 601.5 ft. above mean tide at New York according to the levels of the United States lake survey office, the flow through the canal shall be reduced, the amount of reduction increasing as the monthly mean level falls, until it reaches 601.0 when all flow shall be stopped until the monthly mean level shall be less than 603.0 without claim against the United States, or against any officer thereof.

3. That in addition to the requirements of condition 2 (*supra*), all flow shall likewise be stopped, without claim against the United States, or against any officer thereof, should the monthly mean level of the lake remain below 601.5 for a period of six consecutive calendar months, and shall not be resumed until the monthly mean level shall exceed 601.5.

4. That when the monthly mean level rises above 603.0, the flow through the canal and the remedial works shall be increased to their maximum capacity, and shall so continue until the monthly mean level shall be less than 603.0, without claim against the United States, or against any officer thereof.

5. That should the monthly mean level of the lake remain above 603.0 for a period of six consecutive calendar months, said company shall alter its works at its own expense as soon as practicable so as to allow more flow.

6. That the United States shall have the right to assume entire control of the flow of water through the canal and remedial works in cases of accidents or of emergencies temporarily affecting navigation through the United States ship canal.

7. That should cross currents detrimental to navigation be created by the intake or by the outflow of the canal, said company shall construct such booms, training walls, or other works, as may be necessary to remedy the evil.

8. That said company, in its arrangement and construction of remedial works, shall leave a suitable channel and water flow for the passage of logs over and through St. Mary's falls.

9. That these limitations are in addition to the special limitations of the act of June 13, 1902, regarding riparian or other rights of any person or corporation and the remedies therefor.

10. That the elevations above mean tide at New York, above specified, are those established and in use at this date by the office of the survey of the northern and Northwestern lakes, commonly known as the lake survey office, at Detroit, Mich.

11. Finally, the object and aim of the foregoing paragraphs being to hold the waters of the lake and river under the absolute control of the United States in the interest of navigation, it is expressly understood that said company shall not be entitled to damages should the government at any time or for any cause exercise its right to control and suspend the flow of water through the power canal, in the interest of navigation.

REORGANIZATION OF LAKE CARRIERS.

In most of the big industrial organizations that have been formed within the past few years we find large boards of directors, very often twenty-five in number, but the management is to a very great extent confined to the president and an executive committee of five members. This is the basis of reorganization proposed for the Lake Carriers' Association. One aim will be to have different classes of vessel property represented in the executive committee. It is now more than probable that the reorganization scheme, which involves incorporation under laws of the state of Maine, will be adopted at the coming annual meeting of the association in Detroit, Jan. 21-22. Of course one of the main objects of reorganization is to place the association in position to deal with labor matters. The committee that has been at work for some time past on the reorganization plans, and which consists of Wm. Livingstone, Frank J. Firth, Harvey D. Goulder, J. C. Gilchrist and H. Coulby, met in Cleveland again on Saturday last with members of the association from different parts of the lakes, and as a result of the meeting it was announced that the following is a rough plan of what will be submitted at Detroit:

"Your committee deems it very desirable that the Lake Carriers' Association shall be incorporated, preferably by advice of counsel, under the laws of the state of Maine, the new company to become the legal successor of the old unincorporated association under appropriate action to be taken at the coming annual meeting of the association. The new company should have a real capital represented in shares equivalent pro rata to the net registered tonnage of each vessel represented, separate certificates to issue naming the vessel to which they relate and to be held only by the owner of said vessel. The affairs of the new company should be managed by a board of, say, twenty-one directors, chosen to properly represent all localities and classes of service represented in the membership. The board should select from the members an executive committee of five, chosen to represent the different classes of vessel service. The board should also select from each class an alternate to act in the absence of the committee member representing said class.

"The executive committee would act with the full power of the board, between meetings of the board, except as to matters the board may specifically retain in its own control. On demand of any member of the executive committee a unanimous vote should be necessary upon any proposed action. Provision should be made for appeal from the executive committee to the board and from the board to the association. The president and members of the executive committee should be paid their traveling expenses and a suitable compensation for actual service.

"When thus incorporated, the committee recommends that the association shall, through its board and executive committee, properly consider and determine upon the best way to establish and maintain such amicable relations between all employers and employed on all branches of the lake carrying and terminal service as will insure continued good feeling, and do away with the public injury caused by lockouts and strikes."

The committee that prepared the foregoing is continued with instructions to further develop the details of incorporation on the above lines and they will undoubtedly meet again before the annual meeting but it will not be necessary to have any more general meetings of members of the association.

SALT WATER EXPERIENCE OF A LAKE CAPTAIN.

An amusing story is going the rounds about a lake captain whose name for the purpose of this narrative will be Jerry, and it may as well be confessed that his actual name is also Jerry. He is now a person of ample proportions but there was a time in his life when he was an attenuated mortal, as thin and cadaverous indeed as was Bonaparte when he pointed to the pyramids and cried: "Soldiers of France, forty centuries are looking down upon you." It is with this time of Jerry's life that this luckless tale has to deal. After finishing his first season on the lakes he decided to have a taste of salt water, and so, going to New York, he shipped on an oil steamer for Liverpool. Arriving there he had a splendid time as long as his money lasted, and then, after the manner of his kind, he was taken in tow by one of Liverpool's notorious boarding masters who had an eye for the month's advance which he believed he could obtain from some skipper by shipping Jerry west again. But try as he might no one would ship Jerry. Meanwhile Jerry's appetite, stimulated by the rigorous English climate, grew apace. He delved deep into the pork barrel but what he ate made no perceptible impression upon his size. He was still the same emaciated and flattened individual and was invariably rejected by each succeeding skipper for the same cause—lack of size. After each rejection Jerry went back to his boarding house and pitched into the pile of provisions with a zeal that greatly concerned the boarding master and he determined to get rid of Jerry at all hazards. His opportunity came when a skipper of a vessel, which was lying at Waterloo pierhead shorthanded called and asked for men. Had he any men? He had indeed. He had Jerry who already owed more for board than his month's advance could cover. So Jerry was roused out of bed at 11 o'clock at night and commanded to don his entire wardrobe to which was added certain of the boarding master's cast-off garments. What with two shirts, two vests, two coats, two trousers and sundry other apparel in the shape of sweaters and overcoats he presented an imposing bulk. His proportions were, indeed, splendid, and he was shipped at once as an able seaman. But alas the metamorphosis. When eight bells of the morning watch were struck, the ship being in tow and off Luskar light, Jerry appeared in the habit as he lived to relieve the wheel. The captain was dumbfounded. He did not recognize the able seaman of a few hours before and he asked him in language more forcible than polite where he came from. Jerry explained as best he could but the skipper concluded that he was dealing with a stowaway and that the man he shipped had quit the ship in the darkness. Consequently he treated Jerry as a stowaway and gave him all the dirty jobs that are reserved for stowaways. When the vessel reached New York, Jerry concluded that he had had enough of salt water sailing and resumed his old calling on the lakes where the wages are high and the meals good and where even deck hands are provided with spacious quarters and bath tubs.

Another large freight steamer was launched at the Lorain works of the American Ship Building Co. on Saturday last. The new vessel is for H. A. Hawgood of Cleveland and was named for his son, H. B. Hawgood. She is 434 ft. over all, 414 ft. keel, 50 ft. beam and 28 ft. depth. Her triple-expansion engines will have cylinders of 23, 35 and 58 in. diameter with a common stroke of 40 in. Steam will be supplied by two Scotch boilers of 13 ft. 2 in. by 11 ft. 6 in., fitted with Ellis & Eaves induced draft.

Edward Smith of Buffalo, has sold the steamer Samuel Marshall to the Canada Central Coal Co. of Brockville, Ont. Price paid is reported as $25,000.

CANADIAN LIFE-SAVING SERVICE INADEQUATE.

The Toronto Globe has begun a most commendable crusade for better life-saving service on the Canadian shore of the lakes. There have undoubtedly been a number of lives lost on vessels stranded on the Canadian shore owing to the lack of life-saving equipment. The Globe says:

"The schooner John R. Noyes of Cleveland, the third of the four lake vessels caught off Kingston in the gale on Saturday last, has been accounted for, and thanks to the efforts of Capt. Gray and the life saving crew at Lakeside, all on board have been rescued. The steam barge Resolute ran to Port Dalhousie, and her abandoned consort, the Abbie L. Andrews, ran to Hamilton. The Noyes was in tow of the John Hall, but cut loose when the steamer's machinery broke down and a collision seemed imminent. After drifting all of Saturday and Saturday night, the crew of the Noyes found themselves off Lakeside, about twenty miles east of Charlotte, the port they had sailed from with coal for Deseronto. The weather was freezing cold, the waves had broken in the cabin windows and the spray had covered the vessel, spars and rigging with ice. They tried to ride out the storm at anchor, but the sea was so high that the cable threatened to stave in the bow. The chain was cut and the benumbed and half famished crew in the ice encumbered vessel tried to beat off with a sail they had rigged up. Fortunately they were discovered and rescued by a life-saving crew before the schooner succumbed to the waves. The story of the rescue is one of the most heroic in the annals of the lakes, and it is not a comforting reflection that if the vessel had run to the Canadian side the crew would have gone down with her.

"While the governments on both sides of the lakes have been negligent in the matter of imposing restrictions as to overloading and providing for the inspection of hulls and equipment, the Canadian side is exceptionally deficient in the matter of life saving stations. The most distressing feature of many of the lake tragedies on the Canadian side has been the helplessness of the people on shore, who have seen men clinging to the rigging of stranded vessels while entirely unable to give any assistance. Men who would gladly aid in the work of rescuing a crew in distress have stood about in the chilling wind and freezing spray while the day slowly waned and the night shut out the scene, knowing that before morning the pounding seas would reduce the vessel to wreckage. Men willing to aid, even to risk their lives for the sake of sailors in distress, are often quite helpless owing to the lack of appliances. A few properly equipped life-saving stations in connection with the lighthouse service on the Canadian side could lessen the record of deaths on the lakes. From any such station a life boat, fully equipped, could often be sent by special train to a point near a vessel in distress. With appliances for passing lines and rigging up the usual life-saving devices, workers on shore or on a life boat could often render the needed aid. As yet there has been no attempt to provide life-saving equipment on the Canadian side, but the extent of the lake traffic and dangers inseparable from it should now warrant a reasonable outlay for that purpose. With regulations against overloading and a good life-saving equipment the dangers of lake sailing would be greatly lessened."

PEARY THINKS THE POLE CAN BE REACHED

In an address before the Commercial Club of Boston Com'dr. Robert E. Peary of the United States navy, declared emphatically that the north pole could be reached. "The start over the ice fields shall be made in February rather than in April," he said. "My own party was too small. To successfully accomplish this journey the party should be larger and there should be a small advance party to push along ahead of the others and pick the way. In this way 10 to 15 miles a day could be covered, rather than the 2 miles a day which we were able to make. The project is possible. It is no more difficult than dozens of projects which are every day being pushed to completion. The man who can start from that northern point of Grinnell Land in the earliest return light of February will have in his grasp the pole." The average of the four journeys he made, he said, if extended from the northerly point of Grinnell Land, would have taken him to the pole, while the longest would have taken him beyond the pole.

The speaker was assisted in his lecture by a stereopticon which threw on the screen a hundred or more pictures, reproductions of photographs taken by Com'dr. Peary during his stay in the north. These told more vividly than words the difficulties that were encountered. As a rule, however, they pictured the bright side of arctic life, because the six months of darkness, when life is most tense, are not favorable to the action of the camera.

Com'dr. Peary outlined the different trips he made, first along the Greenland coast, and afterward, on the opposite side, along Grinnell Land. In this first effort he advanced 150 miles beyond the most successful of his predecessors, reached the third highest point north in the polar basin, the highest point in the western hemisphere, and attained the most northerly land in the world. In his second effort, that from Grinnell Land, he depicted the start across the ice fields, the roughness of the ice, and the intersecting streams of water which he encountered. The obstacles, presented in words, seem small, but, when viewed as the camera viewed them, one arrives at something in the nature of an understanding of the situation when Peary turned back.

CLAIMS TREATIES ARE NOT IN THE WAY.

Editor Marine Review: On Page 28 of your Dec. 11 issue, at the close of a letter from a New York correspondent who favors my plan of regulating commerce in the interest of an American marine, you remark: "Very probably the writer of the foregoing communication does not know of the diffculties that stand in the way of discriminating duties on account of our treaty relations with the nations of the world."

In reply to this I desire to say that I am fully informed of all our treaty relations, and there are no "difficulties" to prevent any action of congress under the constitution, to the end that we may have a merchant marine of our own. The people wanting a subsidy have put forth the idea of difficulties existing as an argument for their measure. They could as well argue that the full moon is a big cheese. The Philadelphia lawyer who was employed to search out and assert the "difficulties" aforesaid, is understood to have received a round fee for his skill in exploration. Had there been no subsidy policy to urge upon congress, then we had heard nothing about difficulties in our "treaties," which are time conventions with the time limit expired and either party now at liberty to give one year's notice and terminate the engagement.

In the course of eighty-seven years we have made conven tions for maritime reciprocity with forty-two different countries. We have such agreements now with twenty-three countries. There have been fourteen agreements terminated by eleven foreign nations, not including one with Nicaragua now under notice of termination by that country. Termination is provided for in all cases. What is the reason other countries can terminate and we cannot? Our rights under these agreements are the same for ourselves as for other nations. It is simply a humbugging of the people of the United States to set up this pretense about difficulties. There are none that we do not self-impose from year to year. This is the truth of the matter.

Denver, Col., Dec. 15, 1902. WM. W. BATES.

IMPORTS AND EXPORTS FOR TEN MONTHS.

The fact that the exportation of manufactures this year is larger than in any preceding year except 1900, and that the importation of manufacturers' materials is also larger than in any preceding year lends interest to a statement just prepared by the treasury bureau of statistics showing the details of exports of manufactures and importation of manufacturers' materials. The principal manufactures exported are iron and steel, mineral oils, copper, leather, cotton, agricultural implements, chemicals, wood, paper, paraffin, tobacco, fibers, cars and carriages, india rubber goods, books and other printed matter, distilled spirits and musical instruments—their relative value being in the order named. The principal manufacturers' materials imported are hides and skins, chemicals, silk, india rubber, copper, tin, wool, cotton and wood—their relative value being in the order named.

The bureau of statistics has prepared a statement showing the exportation of these great groups of manufactures and the importation of the great groups of manufacturers' materials in the ten months ending with October, 1902, compared with the corresponding period of last year. It shows that exports of iron and steel manufactures for the ten months ending with October, 1902, were $81,977,545, against $85,911,774 in the corresponding months of last year; exports of mineral oils were $51,175,361, against $55,140,398 in the corresponding months of last year; exports of copper were $10,237,345, against $28,176,263 in the corresponding months of last year; exports of leather and manufactures of were $25,412,536, against $24,115,932 in the corresponding months of last year; exports of cotton manufactures were $28,853,131, against $21,871,264 in the same months of 1901; exports of agricultural implements were $16,246,556, against $15,812,144 in the corresponding months of last year; chemicals, drugs, medicines, etc., were 11,199,111, against $12,006,510 in the corresponding months of last year; manufactures of wood were $10,410,430, against $9,216,197 in the corresponding months of 1901, and paper and manufactures of were $6,200,165, against $6,145,705 in the same months of last year.

In importations of manufacturers' materials the figures of the ten months ending with October, 1902, show an increase in nearly all articles. Importations of hides and skins in the ten months ending with October, 1902, were $48,321,871 in value against $46,692,776 in the same months of last year; chemicals which are largely used in manufacturing were $48,701,129 against $45,840,285; silk unmanufactured $29,276,097, against $23,996,628; fibers, $28,933,891 against $21,198,922; tin, $17,773,089 against $16,248,810; and cotton, $8,050,468 against $6,000,238.

It is reported that a large floating dock, to cost nearly $2,000,000, is being considered as an accessory of the present plant of the New York Ship Building Co., Camden, N. J.

Rear Admiral George W. Melville will not be retired upon reaching the retiring age, but will be retained as chief of the bureau of steam engineering.

ADVANCES IN WIRELESS TELEGRAPHY.

In an address before the National Geographic Society in Washington last week Lieut. Col. Reber of the signal corps of the army gave a general survey of what has, so far, been accomplished in wireless telegraphy.

"In 1899," said Col. Reber, "the chief signal officer of the army instituted a series of experiments with a view of developing a system of wireless telegraphy for military purposes. In September of that year signals were successfully exchanged between Fire island and Fire island lightship, a distance of 10 miles, which now appears very short, but marked the first successful transmission in this country. The system was so perfected by June of 1900 that two stations were installed in San Francisco harbor. These stations have worked uninterruptedly since their erection. At that time it was expected that similar stations could be installed at various suitable points in the Philippine islands, but the constant pressure for every available officer and man of the signal corps for other duties compelled the suspension of work on these lines.

"The difficulty of maintaining the cable between Fort St. Michael and Nome City, owing to its being constantly broken by the movement of the ice pack, and a desire to ascertain the progress in commercial development of wireless telegraphy, led the chief signal officer last spring to issue proposals to all manufacturers of wireless apparatus for two separate installations in Alaska, one over water between Nome City and Fort St. Michael, a distance of 110 miles, and the other over land between Fort Gibbon and Bates City, about 90 miles. Queen & Co., representing the Fessenden system, received the contract for the water line, and the American Marconi Co. that for the land system. Delays of an unforeseen character retarded the completion of the work until after the closed season set in, and the successful operation of these two systems cannot be assured until the open season of the coming year.

"During the combined maneuvers of the army and navy along the coast of Rhode Island and Connecticut during the early part of September, a number of wireless stations were erected by the corps, and two scout boats were equipped with apparatus of the De Forest, Marconi, and Fessenden systems. The use of wireless telelgraphy in those maneuvers demonstrated its great value as an adjunct in the protection of our coast against surprise by an enemy's fleet.

"The navy, also, has for some time past been investigating the possibility of various commercial systems before adopting any particular one as a standard. It has installed one experimental station at the navy yard in Washington, and another at the naval academy in Annapolis, some 38 miles away in an air line. The conditions of the intervening country make this distance equivalent to working over about 150 miles of salt water. The Slaby-Arco, Braun-Ducretet, and Rochefort systems have already been tried, and it is probable that other systems, such as the De Forrest, Lodge-Muirhood, and others will be experimented with in the near future. In spite of the claims made by some of its advocates secrecy, except by the use of a code, is impossible. It is, moreover, possible seriously to interfere with, if not entirely to prevent, the successful exchange of messages by creating intense disturbances in the ether through the dissipation of large quantities of energy. Syntonic working so far has not led to secrecy, but has increased the distance at which signals can be received.

"The experience of the last two years has clearly shown that the proper sphere of wireless telegraphy is communication between shore and ship, and between ships at sea. Neither the cable systems nor the land lines will be supplanted by wireless telegraphy. No results over land have been obtained than can at present warrant its acceptance as a commercial means of transmission. While messages over land have been successfully exchanged up to distances of 50 and 60 miles when the atmospheric, local, the thermal conditions were favorable, that uninterrupted communication which is essential to commercial success has not as yet been achieved.

"The experience of the Poldhu station of the Marconi company in communicating with the Philadelphia and the Carlos Alberto has proved that messages transmitted by a powerful sending station can be received at a great distance under favorable conditions, but what these conditions are is still a matter of uncertainty. During the experiments between the Carlos Alberto and Poldhu their messages were read by Mr. Maskelyne, who had an experimental station at Parthournow, some 18 miles away, although the station at Poldhu was endeavoring to disguise its messages to the Carlos Alberto by superimposing upon it a series of dots.

"The achievement of Mr. Marconi in obtaining signals across the Atlantic last year gives additional interest to his forthcoming endeavor to exchange messages between Poldhu and Table Head, Nova Scotia. The results will be of great scientific interest. His success can be expected, as the distance over which communication is tried is, among other things, a function of the energy radiated. If sufficient energy is radiated, under proper conditions, interchange of messages ought to succeed. The reliability of this method of communication and its probable speed will have to be demonstrated before it becomes a commercial possibility. As more ships and shore stations for wireless work are employed, the question of supervision of the various wireless stations in order to prevent interference becomes of paramount importance to all governments and to the commercial world. Unless strict governmental supervision is established, competing companies may destroy the service of one another, and in time of war the system of communication between vessels of the navy and the shore may be greatly impeded.

"Mr. Maskelyne, in the London Electrician of Nov. 7 has succinctly stated the case as follows. 'No doubt it is most interesting to know that by using great power great distances may be covered. But what then! Can it be seriously proposed to erect 'thunder factories' all over the world, in order to carry on long-distance signalling? Surely not. That would destroy the chief utility of wireless telegraphy, namely, signalling between ship and shore. A gigantic station, such as Poldhu, is calculated to upset every other on land or sea within a radius of 100 miles. Some day there will be a vessel in distress off Cornwall using her wireless installation to call for help, and, because Poldhu happens to be dispensing the mixture as before, that vessel will be unable to communicate. Then there will have to be legislation suppressing those enormous installations. Kaiser Wilhelm, with his usual foresight, appears to have realized the situation. The proposed conference is something for which the time is absolutely ripe. It is time that the matter should be publicly thrashed out. Above all it is time the public realized that so-called wireless telegraphy is, properly speaking, not telegraphy at all. It is merely a means of signalling, invaluable in its own special field, but which can be employed when time, place and circumstance permit.'

"Germany and France have already taken steps to control wireless installations within their own territorial limits, and a movement is now on foot to present the entire subject to an international conference to establish a system of general regulation and control.

"Hertz's brilliant experimental proof of Maxwell's theory in 1888 made wireless telegraphy a possibility. Branly, in 1890, developed the coherer as a detector of Hertzian waves. Lodge, in 1894, succeeded in exchanging signals, using a Hertz radiator and a Branly coherer. In 1895 Prof. Popoff first used the vertical wire in connection with a coherer and an earthed connection. This combination was not used by him, however, for wireless telegraphy, but for the purpose of graphically plotting differences of atmospheric potential. Marconi, in 1896, received his first English patents after he had successfully transmitted messages, using a Hertz radiator as a transmitter and a vertical wire with an earthed coherer at the receiving station. But he did not until a year afterward appreciate the value of the vertical wire, when his attempts to extend the range of transmission of his apparatus failed for want of suitable length. In 1879 Prof. Hughes, the discoverer of the microphone ascertained that the discharge from a Leyden jar would cause the loose contact in a microphone to cohere; but at the time he was convinced that this was an effect due to magnetic induction, and not to the action of Hertzian waves, and it was not until Blondel, in 1898, used the microphone as a wave-detector in wireless working. The progress in wireless telegraphy since that date is so recent that more than allusion is unnecessary.

"When the vertical wire or antenna is charged by the induction coil to such a potential that the air insulation of the spark gap breaks down, electrical oscillations of high frequency are set up in the system formed by the vertical wire and the earthed terminal. These oscillations produce Hertz waves which are radiated outward from the vertical conductor. The antenna may be regarded as one-half of the familiar Hertz oscillator and the radiated waves as traveling over the surface of a conducting plate such as the surface of the earth or the sea. If this plate were perfectly conducting—sea water is practically so—the field of force would be similar to that of the dumbbell radiator, but cut in half by the conducting surface in the plane of symmetry. There is an intrinsic similarity in nearly all of the systems used, their differences being more those of detail in applying the theory as viewed by the various inventors. The use of wireless telegraphy has passed the experimental stage, and is now in a period of development similar to that which prevailed in the field of telephony some ten years ago. With increased knowledge of local, atmospheric and thermal conditions that can be gained only by practical experience, greater certainty of uninterrupted communication will result."

Maj. Arthur Murray and Capts. C. J. Bailey and G. F. Landers of the artillery corps of the army have made a special report to the war department in regard to the recent official trials of the submarine torpedo boats Adder and Moccasin in Little Peconic bay, which they were invited to witness. The report says that these trials are thought to be sufficient to show that this type of submarine boat has passed the experimental stage and such boats hereafter must be taken into account as a practical and useful element of seacoast defense.

Active preparations are in progress for launching the cruiser Galveston at the works of the William R. Trigg Co., Richmond, Va.

PROPOSED CHANGES IN LAW OF MARITIME LIEN.

Managers of dry docks and ship repair yards, as well as ship chandlers and other merchants engaged in furnishing supplies to vessels will be interested in a bill, just introduced in congress, that proposes important changes in the matter of maritime liens. The Maritime Law Association, made up of admiralty lawyers of the country, has had this subject under consideration for a long time past and the bill is undoubtedly the outcome of their deliberations. The title is "a bill to regulate and make uniform the rights of persons furnishing to or for vessels supplies repairs or other necessities." It was introduced by Senator Depew of New York and is numbered 6,488. The full text follows:

Sec. 1. Be it enacted, etc., that any person furnishing supplies, repairs or other necessaries to any foreign or domestic vessel upon the credit of the vessel shall have a maritime lien and may proceed against the vessel in rem.

Sec. 2. That when the supplies, repairs or other necessaries have been ordered by the master or by the owner of the vessel, or by anyone having authority from the owner to procure supplies, repairs or other necessaries for the vessel, they shall be presumed, in the absence of evidence to the contrary, to have been furnished on the credit of the vessel.

Sec. 3. That the following persons shall be presumed to have authority from the owner to procure supplies, repairs or other necessaries for the vessel.

First. The master, a managing owner, a ship's husband or any person to whom the management and control of the vessel in the port of supplies is intrusted. But this provision shall not apply to a charterer, or to anyone employed by him, when by the charter party the charterer is required to furnish such supplies, repairs or other necessaries and the person furnishing knew this or had reasonable means of ascertaining it.

Second. A chief engineer or chief steward actually serving on board, whether employed by the owner or owners or by a charterer, save as above; but the authority of such engineer or steward shall be deemed to extend only to the procuring of such supplies or repairs as are usually and reasonably required in their respective departments.

Sec. 4. That no lien for supplies, repairs or other necessaries for a sum exceeding $100 upon a vessel of the United States shall continue to be valid for more than ninety days after such supplies, repairs or other necessaries were furnished, unless before the expiration of said time a statement of lien such as is hereinafter described shall have been filed in the office of the collector of customs for the port where she was when such supplies, repairs or other necessaries were furnished to her.

Sec. 5. That no lien for supplies, repairs or other necessaries upon a vessel of the United States shall continue to be valid for more than one year after such supplies, repairs or other necessaries were furnished, unless suit to enforce such lien shall have been begun. For that purpose a libel for the enforcement of such lien in rem may be filed in the United States district court of the judicial district wherein the notice of lien is filed at any time before the expiration of the year, whether the vessel at the time of filing the libel is within the district or not; and if the vessel cannot be arrested in such suit, then if the owner or claimant of the vessel does not voluntarily appear therein and give bond or stipulation with surety approved by the court for the payment of the claim, with interest and costs, in case final judgment be recovered upon said lien, pursuant to the course of the admiralty, the filing of such libel shall be deemed the commencement of suit sufficient to preserve such lien, and the lienor or his legal representatives or assigns may, within a reasonable time thereafter, arrest the vessel by suit in rem for the recovery of his claim in any other place or district wherein the vessel may be found.

Sec. 6. That the statement of lien required by this act shall set forth the name of the vessel; the port from which she hails; the person who ordered the supplies, repairs or other necessaries; the name and address of the lienor; the amount of the claim, with the items thereof, their dates, and all just credits, and the balance due at the time of filing the statement. The statement shall be signed and verified by the lien claimant or by some person on his behalf.

Sec. 7. That the collector of customs shall file and index the statements of lien required by this act according to regulations to be provided by the secretary of the treasury, and upon the filing of a duly executed and acknowledged receipt of payment or satisfaction piece of such claim, or upon the order of the United States district court for that district, he shall mark the said statement of lien canceled.

Sec. 8. That the owner or claimant of the vessel may deposit with the clerk of the United States district court of the judicial district wherein the statement of lien is filed the amount claimed, with interest and the clerk's fees thereon, together with a bond with surety approved by the court for the payment of any further interest and costs of suit if the lien be sustained; and thereupon the court may, on notice by mail to the lienor, at the address stated in the statement of lien, order the statement of lien filed as aforesaid to be canceled, and such deposit and bond shall thereafter be held to answer any judgment or decree recovered by the lienor upon his claim. If no suit for the enforcement of such claim be commenced within sixty days thereafter, the court may, on similar notice to the lienor, unless further time for suit be given, order the deposit returned and the bond canceled.

Sec. 9. That this act is intended to supersede all state statutes purporting to create rights of action against vessels for supplies, repairs and other necessaries.

Sec. 10. That nothing herein shall affect the rules of law now existing in regard to the priority of rank of liens on vessels or in regard to the right to proceed in personam.

Sec. 11. That this act shall take effect immediately.

LAUNCH OF A SIX-MASTER.

Percy & Small, Bath, Me., launched last week the six-masted wooden schooner Addie M. Lawrence. The vessel is constructed in the strongest manner possible, and from the best of material. She has a two-tier keel of birch and maple, 13x15 in., and her main keelson is six tiers high, 14x14 in. There are two three-tier keelsons, one on each side of the main keelson, and each 14 in. square. The craft is planked with yellow pine running from 14 in. on the bottom to 6 in. on the gunwale. The ceiling and decks are also of yellow pine, the lower deck being already laid and the main deck nearly completed. The vessel has a poop deck which runs forward to about half way between the mainmast and the foremast.

Each of the six tall masts is a handsome specimen of Oregon pine, 118 ft. tall. The topmasts are of the best selected spruce, 55 ft. tall. Wire has been used exclusively in rigging, all set up very tightly with turnbuckles. The sails are of the best quality duck and her approximate sail area will be about 9,000 yds. The vessel will carry two stockless anchors. Each weighs 8,500 lbs. and is attached to 240 fathoms of 2½-in. hard welded chain. The machinery is of the latest model and every labor-saving device known has been installed, including a Hyde windlass, steam engine and boiler, deck pumps, force pump and implements for loading and unloading cargoes.

The after cabin is unusually large and is divided into the usual compartments, which are light and roomy. The dining room is in the forward compartment and the reception room at the rear. The captain has a large room, elegantly furnished, and in one corner is a spacious chart desk. Besides this room is one for the first mate, several guests' chambers and a bathroom, the whole finished in mahogany and quartered oak.

This is the largest schooner launched in Maine this year, the second largest ever built in the state, and the third largest ever built in this country, the Eleanor A. Percy and the George W. Wells holding the record for size. She was built by the same firm that built the Eleanor A. Percy and will be launched from the same cradle. She is named for Miss Addie M. Lawrence of Fairfield, Me., and is owned by J. S. Winslow & Co. of Portland. Her dimensions are 292.4 ft. long, 48.3 ft. beam, 22.2 ft. deep, with a gross tonnage of 2,807 and net of 2,195.

WHITE STAR LINE AS SOLD.

English maritime papers are still talking about Mr. Morgan's purchase of the White Star Line, and are insisting that he paid too much for it. Of course that is Mr. Morgan's affair wholly and there is really no reason why they should be so solicitous about it. As to what Mr. Morgan actually bought when he bought the White Star Line they give the following list of actual vessels:

	Built in	Tons gross
Oceanic	1899	17,274
Majestic	1889	9,965
Teutonic	1889	9,984
Germanic	1874	5,071
Britannic	1874	5,004
*Celtic	1901	20,904
Cymric	1898	13,096
*Cedric	1902	21,000
Georgic	1895	10,077
Bovic	1892	6,583
Nomadic	1891	5,749
Cevic	1894	8,301
Tauric	1891	5,730
Gothic	1893	7,755
*Athenic	1901	12,234
Delphic	1897	8,273
*Corinthic	1902	12,231
*Ionic	1902	12,500
Afric	1898	11,948
Medic	1898	11,985
Persic	1899	11,973
*Runic	1900	12,482
*Suevic	1900	12,500
Doric	1883	4,680
Coptic	1881	4,356
Gaelic	1885	4,206
Magnetic	1891	619
Pontic	1894	395
		28=266,875
Deduct vessels finished since Dec. 31, 1900		7=103,851
		21=163,024

*Not running in 1900.

ALMY WATER-TUBE BOILER.

The Almy Water Tube Boiler Co., Providence, R. I., has put out a catalogue of more than usual excellence devoted to its water-tube boiler. The catalogue contains various records of Almy water-tube boilers in use which are in themselves recommendations of durability, capacity and economy. The catalogue also contains illustrations of nearly 200 vessels which are equipped with this type of boiler. It is related that the Almy sectional water-tube boiler is designed to fulfill the following essential features: Simple construction, perfect circulation, large combustion chamber, greatest amount of heating surface possible in fire box, the latest and most efficient method of separating steam from the water, water in sufficient quantity to prevent excessive fluctuation, mud-drum to receive precipitation, expansion provided for in every part, accessible in all parts for cleaning and repairs, occupying small space, non-explosive, of very light weight, yet strong and durable. In a general description it is recorded that the Almy water-tube boiler consists of an upper and lower manifold, side, fore-and-aft sections, feed-water heater, steam dome and water reservoir, grates and casing. The top manifold extends across the front and along the sides of the boiler. The bottom manifold extends along the sides and across the back of the boiler below the grates. Between the top and bottom manifolds is the heating surface, which is composed of side and fore-and-aft sections. The top manifold is connected at the front of the boiler to a vertical steam dome or separator. The steam dome or separator is connected at the bottom to a horizontal water reservoir extending across the front of the boiler. At the top of the separator are the steam connections. The horizontal water reservoir is connected by down-flow pipes to the ends of the bottom manifold. A water heater of two or more layers of pipes are placed upon the top manifold. One end of the heater is connected to the feed pipe, the other end to the under side of the water reservoir. The casing is composed of upper and lower parts. ash pan and hood.

View showing Interior of West End of Boiler Shop.

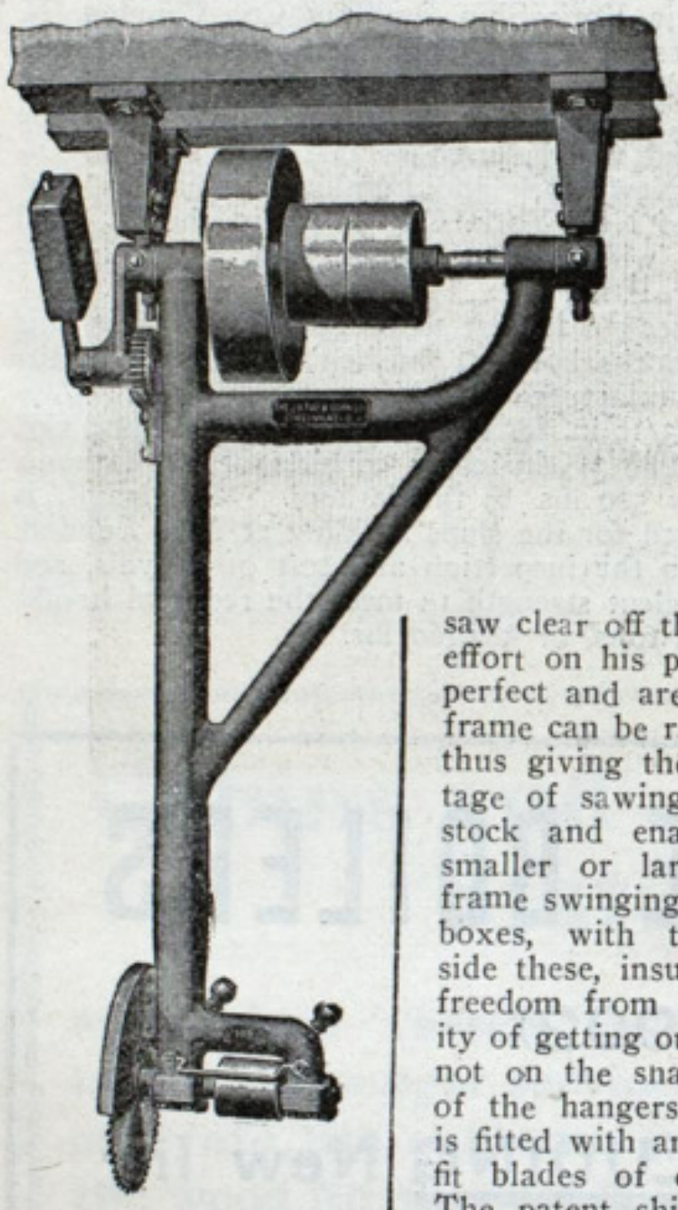
These boilers are designed for 250 lbs. steam pressure. Each of the sections which form the heating surface of the boiler are tested at 1,000 lbs. hydrostatic pressure before they are assembled in the boiler. The method of removing soot or ashes from heating surface is the use of a steam jet through openings in the casing provided for that purpose. In order to get the best results it is necessary to keep the heating surface clean. When the boilers are out of commission they should be thoroughly dried out and the ashes swept off and cleaned around the tubes. The bottom manifold and ash pan should be painted and the heating surface sprayed with crude petroleum oil. For keeping the

inside of the tubes clear it is necessary to use clean water and also a filter box to prevent the oil from being carried into the boiler in excess.

It is well known, of course, that one of the most essential features for economy in generating steam is good firing. On this score the catalogue says: "Good firing consists in keeping a level fire all over the grate and of a proper thickness to insure perfect combustion. The thickness of the fire should be governed by the amount of draft and kind of fuel used. The fuel should be supplied in small quantities and at short intervals, keeping the door open as little time as possible. Great care should be taken to keep the corners and all around the edges of the furnaces well covered with coal. The design of the boiler is such as to enable repairs to be made conveniently, quickly and with little expense. As this is a sectional boiler any or all sections which constitute the heating surface may be removed without disturbing anv of the other parts or casing. Should a section become defective it may be stopped by placing a disk of metal in the union, at the top and bottom of the defective section, or the section may be removed and plugs screwed into the union nuts. The boiler may then continue in use until repairs are properly made."

IMPROVED SWING SAW.

The machine illustrated herewith is designed for general work, and the manufacturers claim it will do it in a profitable manner. They call attention to the following mechanical advantages embodied in its make up:



The patent adjustable balance weight, the way it is attached and the manner of operation gives the machine great advantage for doing rapid work, as it helps the operator both ways, and when the cut is made swings the saw clear off the lumber without any effort on his part. The hangers are perfect and are so arranged that the frame can be raised or lowered 6 in., thus giving the operator the advantage of sawing either thick or thin stock and enabling him to use a smaller or larger saw blade. The frame swinging on the outside of the boxes, with the counter-shaft inside these, insures perfect execution, freedom from wear, and impossibility of getting out of line, as it swings not on the snaft, but on the boxes of the hangers. The steel mandrel is fitted with an expansion device, to fit blades of different sized holes. The patent shield on the saw prevents all possible accidents. The frame of the machine being broad at the base, accuracy of work is assured.

Any other information, with special terms, will be furnished by applying to the makers, J. A. Fay & Egan Co., large manufacturers of wood-working machinery, Nos. 325 to No. 345 West Front street, Cincinnati, O., who will also send cuts showing the machine to better advantage and more in detail and their new complete catalogue.

Washburn Bros., Thomaston, Me., are to build another four-masted schooner.

The Norwalk Steamboat Co., Norwalk, Conn., is considering the advisibality of building a passenger and freight steamer for its service.

The landing and splicing of the shore end of the Pacific cable, which is to connect the United States with Honolulu, was accomplished at San Francisco last week, in the presence of 40,000 persons.

The Hamburg-American liner Deutschland burst a cylinder head and crippled her starboard engine on her latest trip. She put into Plymouth and later left for Hamburg. It will require four months to repair her.

Mr. Stevenson Taylor, of the firm of W. & A. Fletcher Co. of Hoboken, N. J., has been appointed superintendent of construction of the new Fall River Line steamers to be built by the Fore River Ship & Engine Co., Quincy, Mass.

Mr. Beecher Ogden, formerly manager of the advertising department of the International Correspondence Schools, Scranton, Pa., has removed to New York and is connected with the advertising department of the H. W. Johns-Manville Co.

TRADE NOTES.

Mr. T. L. Lyman, manager of the asbestos department of H. W. Johns-Manville Co., New York, sailed Dec. 20 for Havana, Cuba, where he will remain about two weeks for the benefit of his health.

"Sanders" is the title of a catalogue issued by the J. A. Fay & Egan Co., of Cincinnati. The cover is red embossed in gold. It is an extremely well printed catalogue and is full of information about sandpapering machines.

Riggs & Bros., 310 Market street, Philadelphia, have issued their nautical almanac for 1903, which is a compendium of information regarding tides and the phases of the moon. It also contains navigable aids on the Delaware river and bay, and the international rules to prevent collisions at sea.

The Cleveland Punch & Shear Works Co. secured an order this week from the Great Lakes Engineering Works, Detroit, for Cleveland tools to be installed in their new plant. The contract calls for twenty-eight machines, consisting of punches, shears, rolls, plate planers, radial drills, etc. The amount of the order aggregates about $50,000 and is one of the largest contracts awarded this year in this line.

The artistic use of paint," says Emersoon, "distinguishes the homes of civilization from the huts of the savage." The Goheen Manufacturing Co. of Canton, O., has issued a catalogue devoted to galvanum, a paint that will adhere to galvanized iron. Galvanum is made in two colors only, dark lead color and stone drab. Any good ordinary paint can be used over Galvanum where the colors are not suitable, and it is claimed that one gallon of galvanum will cover 550 sq. ft. of surface. The catalogue contains a very creditable photograph of Andrew Carnegie's New York house, in which galvanum is used on galvanized work.

Referring to the advantages of Smooth-On gaskets, the manufacturers say: "A Smooth-on gasket connection may take a little longer time to make, than when using an ordinary steam packing, but when once made it will be more durable and seems to improve with age. Difficult flanged connections can be easily made with Smooth-On as it is applied in a plastic state and adapts itself to the flanged faces whether parallel or not. For high temperature and high pressure work its value is clearly evident. It has been tested to 1,500° Fahr. and withstood 400 lbs. steam pressure without injury. Smooth-On when hard expands and contracts the same as iron, keeping the joint tight at all temperatures, and it will withstand steam, water, fire or oil. A sixty-page illustrated book giving further information on this subject, will be sent free. The cements are packed in 5, 10 and 25-lb. tins." The address of the company is 572-574 Communipaw avenue, Jersey City, N. J.

President J. W. Duntley of the Chicago Pneumatic Tool Co. arrived in Chicago a few days ago after an extended business trip in Europe. In regard to the work accomplished by the detail of skilled mechanics who were sent abroad a few months ago to introduce pneumatic tools in Europe, Mr. Duntley says they are meeting with success everywhere, but especially in the foreign ship yards. While he was in Europe the men were devoting their attention to the ship yards of Germany and had visited seven of them. He has received requests to send these men to France, Spain and Italy and intends doing so in the near future. The German emperor evinced considerable interest in the exhibitions made in the German yards, having personally inspected the work on several occasions. A special object of Mr. Duntley's trip was to arrange for the erection of another European plant for the manufacture of pneumatic machinery. The new works are to be erected at Fraserburg in Aberdeenshire, Scotland, and will cost approximately $175,000. The necessary machinery will be purchased in this country. This is in addition to two large factories already in operation in Europe. Mr. Duntley also made arrangements with a large German factory to make his company's tools on contract.

BIG ORDER FOR ANCHOR CHAIN.

An order has just been secured by Mr. Eli Attwood, president and general manager of the Lebanon Chain Works, Lebanon, Pa., from the New York Ship Building Co., Camden, N. J., for forty-four pieces of 15 fathoms each 3⅛-in. stud link anchor chain for vessels Nos. 5 and 6 now under construction at the Camden works. These ships will be owned by the Morgan combination and will be used as fast mail and passenger steamers between New York and London, running in connection with the City of New York, City of Paris, the St. Paul and St. Louis. They will each be 600 ft. long, 73 ft. longer than the New York or Paris.

This chain is the second largest to be manufactured in this country, the Lebanon works has just finished the making of the largest chain ever manufactured in this country—the 3 3/16-in. stud link cable of 3 3/16 in. for the Eastern Ship Building Co., New London, Conn. The 3⅛-in. chain consists of 660 fathoms weighing approximately 560 lbs. to the fathom. The length is the same as that required for the ships building at New London. The chain is subject to the inspection and test of Lloyd's, and will have to be of sufficient strength to meet the required breaking test of 215¼ gross tons, or 482,160 lbs.

COMMERCE WITH OUTLYING POSSESSIONS.

The noncontiguous territory of the United States is supplying a large growing market to the producers and manufacturers of the United States. The October statement of the treasury bureau of statistics shows that the shipments of merchandise from the United States to Porto Rico in the ten months ending with October 1902 amounted to practically $10,000,000, $1,000,000 a month against $5,775,000 in the corresponding months of last year. To the Philippines the shipments in the ten months ending with October were over $4,000,000 against a little over $3,000,000 in the corresponding months of last year, and $2,750,000 in the same months of 1900. To the Hawaiian islands the collection of statistics of shipments was only resumed with the month of June, and the figures therefore do not cover the ten months' period as is the case in the commerce with Porto Rico and the Philippines; but the annual shipments from the United States to the Hawaiian Islands are estimated at about $20,000,000 per annum. To Alaska, the record of shipments was begun with Kune, and amounted during the four months ending with October to nearly $3,000,000. The figures at hand for these four noncontiguous territories—Porto Rico, Hawaii, the Philippines and Alaska—indicate that they will furnish during the year about to end a market for about $40,000,000 worth of the products of the United States, chiefly agricultural and manufactured products.

On the import side the report of the bureau of statistics indicates that these island territories are also contributing largely to the growing demand of the United States for tropical products. In the ten months ending with October, the shipments from Hawaii to the United States amounted in round terms to $21,000,000, and those from Porto Rico to the United States to nearly $9,000,000, against $6,500,000 in the corresponding months of last year; while from the Philippines the receipts were over $7,000,000 and from the Philippines the receipts were over $7,000,000 and from Alaska over $8,000,000 in the four months ending with October. These figures indicate that the annual contribution of tropical products by the tropical territory under the control of the United States will amount in the present year to about $45,000,000, and that the receipts of merchandise from Alaska will amount to $15,000,000, making the total receipts of merchandise from the noncontiguous territory nearly or quite $60,000,000 in value, and the shipments from the United States to that territory $40,000,000.

The principal articles received from the territory in question are: from Hawaii, sugar, amounting in the ten months ending with October to 645,000,000 lbs. valued at $20,000,000; from Porto Rico, sugar and molasses, amounting to $6,500,000, and tobacco, nearly $2,000,000; from the Philippines manila hemp, amounting in value to over $7,000,000 in the ten months ending with October; from Alaska, salmon, amounting to nearly $7,500,000 in the four months ending with October.

The principal articles for which the territory in question supplies a market are as follows: To Porto Rico during the ten months ending with October, cotton cloths, 22,000,000 yds., valued at $1,211,000; iron and steel manufactures, $1,164,000; breadstuffs, $954,000, of which $853,000 is flour; boots and shoes, $186,000; malt liquors, $118,000; fish, $217,000; provisions, $1,196,000, of which $916,000 represents value of hog products; rice, 47,000,000 lbs., valued at $1,652,000. To the Philippine islands, iron and steel manufactures to the value of $725,000; mineral oil, $270,000; paper and manufactures thereof, $209,000; provisions, $163,000; cotton cloths, $324,000; hay, $108,000; wood and manufactures thereof $252,000, and scientific instruments, $105,000. The shipments to the Philippine islands include manufactures of all classes, especially iron and steel, also flour and other breadstuffs. To Alaska the largest items are provisions, breadstuffs, fruits and nuts, iron and steel manufactures, vegetables, tobacco, and manufactures of wood.

WEARING POWER OF SUBMARINE CABLE.

A section of the submarine cable between Cienfuegos and Santiago, in the Caribbean sea, has recently been raised, with some very interesting results. The cable was manufactured in 1873, and laid off Cienfuegos, Cuba, in 1881. Some few months ago a question arose as to the durability of cables covered with india rubber, as in this case, and it was decided to raise the Cienfuegos cable and subject it to tests. The line was picked up in 1,350 fathoms of water in April last and received at the works of Messrs. Hoopers, at Millwall, in June. The tests of this core showed that after twenty years' submersion it was still in perfect electrical condition. An examination of a foot specimen proved that the insulation was in good mechanical condition, and that the copper conductor had not suffered from the attacks of any sulphur in the rubber.

The American Navigation Co. has been formed in Maine with a capital stock of $1,000,000. It contemplates the establishment of a large fleet of vessels under one head and some important changes in the management of shipping. It is understood that vessel property in many New England ports will be merged into this company, and from time to time the company will build vessels to add to its fleet. The president of the company is E. W. Hyde, president of the Bath Iron Works. The directors are J. S. Lowell, G. P. Addition and H. A. Duncan of Bath, and S. T. Kimball of Rockland.

The Crane Co. will distribute this year $135,000 among its various employes as Christmas gifts, giving each man 5 per cent. of his annual wages.

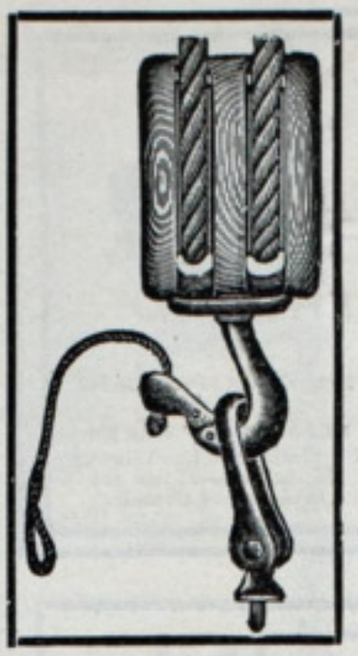
Despite the reluctance of some of the members of the house committee on naval affairs to authorize the construction of additional naval vessels at the present session of congress, Secretary Moody, who appeared before the committee last week, strongly recommended the program outlined in his annual report. He emphasized the necessity for thoroughly training men for the naval service, and urged that provision be made for the construction of two steel ships for training landsmen and apprentices, to cost $375,000 each, and one wooden sailing brig for training apprentices, to cost $50,000. He also urged the authorization of two powerful battleships along the general lines of the Connecticut and Louisiana, to cost about $7,000,000 each, and emphasized the wisdom of the policy of continuing the building of ships which could keep the sea for the longest possible length of time and could take their place in line of battle against the most powerful ships in any foreign navy. He also advocated the construction of two hospital ships, but opposed the construction of any more submarines for the present.

Standard Automatic Releasing Device.

The Falls are so rove that both ends of the boat detach, irrespective of which end strikes the water first

Will release a boat immediately in the roughest sea or under speed and can be hooked on without delay or injury to the hands of men hooking it on.

Standard Automatic Releasing Hook Co..
New Cheesebrough Bldg.
17 State St., New York.



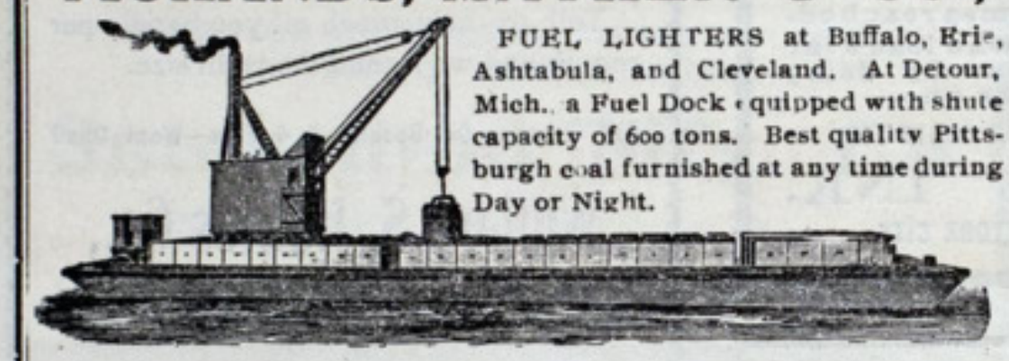
SHEPARD'S HORSE POWER SCALE

FOR DETERMINING
HORSE POWER,
SIZE OF CYLINDERS,
DENSITY, TEMPERATURE,
LATENT HEAT OF STEAM.

Has sold in great numbers at $1 each.

OFFERED AS A PREMIUM WITH ONE YEAR'S SUBSCRIPTION TO THE MARINE REVIEW AND MARINE RECORD AT $3.00.

PICKANDS, MATHER & CO.,

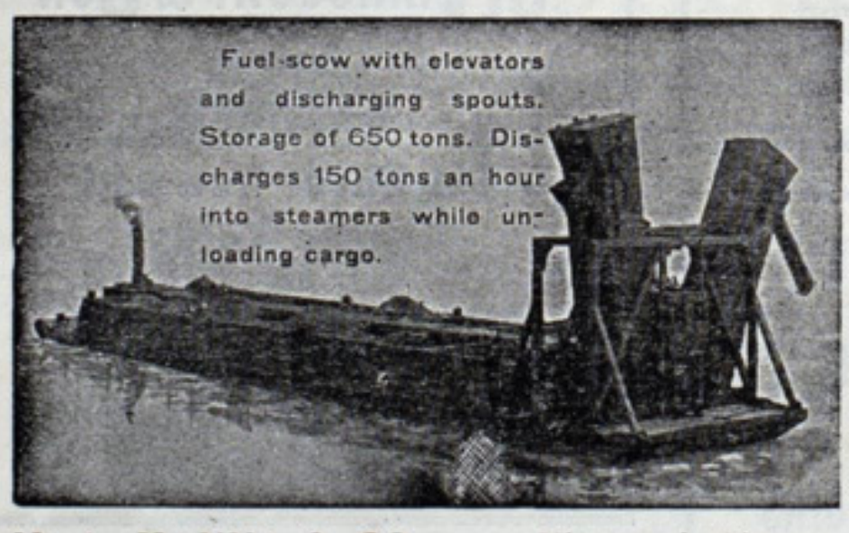


FUEL LIGHTERS at Buffalo, Erie, Ashtabula, and Cleveland. At Detour, Mich., a Fuel Dock equipped with shute capacity of 600 tons. Best quality Pittsburgh coal furnished at any time during Day or Night.

Western Reserve Building, CLEVELAND, O.

Steamboat Fuel at Ashtabula.

Large Supplies of best Quality.



LIGHTER Carrying Different Grades at all Times.

M. A. HANNA & CO. Miners and Shippers, Main Office Perry-Payne Bdg. Clevl d.

CLEVELAND CITY FORGE & IRON CO.

IRON OR STEEL FORGINGS FINISHED COMPLETE, ROUGH MACHINED OR SMOOTH FORGED ONLY, OF ANY WEIGHT
COUPLING LINKS AND PINS. PRESSED WROUGHT IRON TURNBUCKLES. CAR IRON SPECIALTIES.

SHIP OWNERS AND MASTERS

For the protection of your property on the lakes, whether steam or sail, always have on board your craft a barrel of

"Vacuum Sea Oil,"

the merits of which are appreciated as a result of the experience of the principal shipping people of the ocean and lakes.

STANDARD OIL CO.,
of New York.
MARINE OIL DEPARTMENT.

Stocks Carried at the Principal Ports.

One of these binders, that will hold a complete volume of the

Marine Review

and Marine Record,

will be mailed to any address on receipt of

$1.

THE MARINE REVIEW PUB. CO., 39-41 Wade Bldg.
CLEVELAND, O.

• • Buffalo • •

Wrought Steel Ranges

Are the Best.

Steamboat and Barge Ranges with Rotary Grates.
No Cog Wheels to Warp or get out of order.

Don't take our word for it but ask some one using them.

Russell & Watson, General Steamboat Work

BUFFALO, N. Y. **Send for Catalogue.**

VESSEL AND INSURANCE AGENTS

T. R. McCARTHY,

STEAMSHIP and FREIGHT BROKER.

Chartering, Forwarding and General Commission Agent; and Broker for the Sale, Purchase and Construction of Steamers and Sailing Vessels.

Marine and Fire Insurance Effected.

Cable address: "MACARTHY, MONTREAL."

(Watkins', Scott's, Lieber's, and A. B. C. Codes used.)

Shipping agent to THE ASBESTOS & ASBESTIC CO., Ltd., of Danville, Que.

6 St. Sacrament St. - - - - - - - - Montreal, Can.

Correspondence invited and Agencies Solicited.

C. W. Elphicke. H. B. Earhart.

C. W ELPHICKE & CO.,

VESSEL AND INSURANCE AGENTS,

Rooms 9-11, No. 6 Sherman St., CHICAGO, ILL.

Long Distance Telephone, Harrison 1194.

W. A. Hawgood. Arthur H. Hawgood.

W. A. HAWGOOD & CO.,

VESSEL and INSURANCE AGENTS.

220-221 Perry-Payne Bldg., - - CLEVELAND, O.

Long Distance Telephone, Main 2395.
Residence Telephone, W. A. Hawgood, Doan 84-J.
Residence Telephone, Arthur H. Hawgood, Doan 841-J

John Mitchell. John F. Wedow. Alfred Mitchell.

MITCHELL & CO.,

VESSEL and INSURANCE AGENTS,
508, 509 & 510 Perry-Payne Bldg.

Office Telephone, M 767. Residence, John Mitchell, Doan, 341. John F. Wedow, Doan 141 J.
Alfred Mitchell, Doan, 218.

CLEVELAND, - - - - - - - - - - - - OHIO.

C. L. Hutchinson. W. H. McGean.

HUTCHINSON & CO.,

VESSEL AND INSURANCE AGENTS.

Office Telephone, Main 2453.
Residence, C. L. Hutchinson, Ridge 345-L.
Residence, W. H. McGean, East 1421-J.
313-315 Perry-Payne Bldg., - - CLEVELAND, O.

W. C. RICHARDSON,

VESSEL and MARINE INSURANCE AGENT,

420-421 Perry-Payne Building, - - CLEVELAND, O.

Office Telephone 338; Residence Telephone, 2938.

D. Sullivan. F. J. Sullivan.

D. SULLIVAN & CO.

VESSEL AGENTS.
MARINE INSURANCE.

2-4 Sherman Street, - - - - CHICAGO, ILL.
Office Tel. Harrison 2847; Residence Ashland 2483.

R. J. DUNHAM,

VESSEL AGENT. MARINE INSURANCE.

214 Sherman Street, - - - - - CHICAGO, ILL.

TELEPHONES:

Office, Harrison, 2630; Residence, Dearborn, 671.

John B. Hall. Harry B. Root.

HALL & ROOT,

VESSEL AGENTS.

21-22 Exchange Building, 202 Main Street.,

Telephone, Seneca, 892. BUFFALO, N. Y.

W. W. BROWN.

Member Cleveland Stock Exchange.

Buys and Sells all Kinds of Vessel Property.

1105-1106 Williamson Bldg., - - CLEVELAND, O.

JOHN J. BOLAND,

VESSEL and INSURANCE AGENT,
25-26 Exchange Building, 202 Main St.

Telephone, Seneca, 115. BUFFALO, N. Y.

J. J. H. Brown. J. B. Rodgers. Edward Smith.

BROWN & CO.,

VESSEL and INSURANCE AGENTS.

202 Main Street, - - - - - - BUFFALO, N. Y.

VESSEL AND INSURANCE AGENTS.

SAMUEL HOLMES,

STEAMSHIP OFFICES, Morris Building.
66-68 Broad, St.,

For Selling, Chartering and Building all Classes Steam Vessels.

Steam Vessel Circulars.
Weekly Freight Circulars. NEW YORK.

RUFUS S. KING,

Commission Merchant and Broker

MARITIME BUILDING, 6-10 BRIDGE ST.,
Near Battery Park, NEW YORK.

Has the Largest List of Steamships and Sailing Vessels for Sale in America, Consequently Most Bargains.

Buying, Selling and Building of Steamships, Ships, Yachts, Tugs, Steam Lighters, Schooners, Barges, etc.

Expert on Valuation of Steam and Sailing Vessels.

CABLE ADDRESS, "RUFUS," WATKINS' CODE.
TELEPHONE, 3404 BROAD.

F. H. WEEKS,

MARINE BROKER,

Vessels Sold, Chartered, Built and Insured.
Cable Address, WEEKSHIP, New York.

Telephone, 3275 Broad. 32 Broadway, New York.

Charles P. Notman. David H. E. Jones.

JAMES W. ELWELL & CO.,

Established 1830.

SHIP BROKERS and STEAMSHIP AGENTS.
Sell and Charter all Classes of Vessels.

Agents for Cyprien Fabre & Cie. S. S. Line, Cie. Havraise Peninsulaire, and Northwestern S. S. Co.

Battery Park Bldg., 21-24 State St. NEW YORK.

PROCTORS IN ADMIRALTY.

McPherson, Clark, Campbell & Jarvis,

Barristers-at-Law, Attorneys, Proctors in Admiralty.
(Trust and Guaranty Building)
16 King St. West, - - - TORONTO, CANADA.
ADMIRALTY AND MINING.
Telegraphic Address, "Clapher-Toronto."
(W. D. McPherson and J. M. Clark authors of "The Law of Mines in Canada.")

RAY G. MacDONALD,

Attorney at Law and Proctor in Admiralty.

Suite 618 New York Life Building,

Telephone Central 723. CHICAGO, ILL.

SHAW, WARREN, CADY & OAKES,

Attorneys-at-Law,

904 to 907 Union Trust Bldg.,

Telephone 685. DETROIT, MICH.

C. E. KREMER,

Counsellor at Law and
Proctor in Admiralty.

Suite 821-822 - - - - New York Life Building.

CHICAGO, - - ILL.

H. H. BACON,

Attorney and Counsellor at Law
and Proctor in Admiralty.

NOTARY PUBLIC WITH SEAL.

Rooms 25 and 26 City Bank Building,

319 Main Street, - - - - - BUFFALO, N. Y.

PROCTORS IN ADMIRALTY.

HARVEY L. BROWN,

PROCTOR IN ADMIRALTY.

35 White Building, BUFFALO, N. Y.

HOYT, DUSTIN & KELLEY,

LAWYERS AND PROCTORS IN ADMIRALTY.

Offices, 702 Western Reserve Building,
CLEVELAND, O.

White, Johnson, McCaslin & Cannon,

ATTORNEYS AT LAW and
PROCTORS IN ADMIRALTY,

Williamson Building, - - - - - CLEVELAND, O.

GOULDER, HOLDING & MASTEN,

LAW OFFICES,

Harvey D. Goulder. S. H. Holding. Frank S. Masten.

Perry-Payne Building, - - - CLEVELAND, O.

ALBERT J. GILCHRIST,

PROCTOR IN ADMIRALTY,

604 Perry-Payne Building, - - - CLEVELAND, O.

O. C. Pinney. Dorr E. Warner.

PINNEY & WARNER,

LAWYERS AND PROCTORS IN ADMIRALTY.

Rooms 316 and 317 Perry-Payne Building,

Telephone Main 2585. - - - - CLEVELAND, O.

H. R. SPENCER,

Marine Law,

BOARD OF TRADE BUILDING,

DULUTH, MINN.

PROFESSIONAL.

W. J. WOOD,

NAVAL ARCHITECT & CONSULTING ENGINEER.

Prepares designs or working drawings and specifications for all classes of vessels and superintends construction and repairs. Surveys damaged property and estimates cost of repairs. Arbitrator and court expert.

Vessels designed—Twin S. S. Virginia, U. S. S. Frolic, formerly steam yacht Comanche, Twin S. S. North West and North Land, I. W. Nicholas, and many others, including Fire Boats, Tugs, Barges, etc.

Complete Plans Furnished For
Steel Composite or Wooden Vessels.

709 Rialto Building, - - - - - - - CHICAGO.
Tel. Harrison 1020.

R. L. NEWMAN, Consulting Engineer, Naval Architect.

SHIP AND YACHT BROKER.

Attention to development of designs and superintendence during construction. Vessels for carrying oil in bulk a specialty; also surveys on general repairs. Oil fuel systems for marine and land purposes developed under the patents of the International Oil Fuel Construction Company of New York.

817 Chesebrough Bldg., Bowling Green, NEW YORK.

JOSEPH KIDD,

Marine Architect and Surveyor. Consulting Ship Builder and Engineer.

Over thirty years' experience. Specifications, Designs and Estimates, Superintendence of Construction and Repairs. Damage and other Surveys carefully attended to. Negotiations for the building, charter or sale of all kinds of vessels and machinery.

610 Board of Trade, DULUTH, MINN.

AMBROSE V. POWELL, M. Am. Soc. C.E.

CIVIL ENGINEER,

Designs and Constructs Dry Docks, Harbor Works, Docks and Plant for Handling Coal and Ore, Foundations.

Office, 1008 Chamber of Commerce, CHICAGO, ILL.

U. S. Engineer Office, Duluth, Minn., Dec. 15, 1902. Sealed proposals for building pier extension and additional superstructure at Grand Marais, Mich., will be received here until noon, Jan. 15, 1903, and then publicly opened. Information on application. D. D. GAILLARD, Capt., Engrs. Jan. 8.

U. S. Engineer Office, Duluth, Minn., Dec. 13, 1902. Sealed proposals for furnishing and driving 819 bearing piles for new Wisconsin Entrance Piers, Superior, Wis., will be received here until noon, Jan. 14, 1903, and then publicly opened. Information on application. D. D. GAILLARD, Capt., Engrs. Jan 8.

OFFICE CHIEF OF ENGINEERS, U. S. Army, Washington, D. C., Nov. 26, 1902. Sealed proposals for building steel hull, furnishing and installing pumping and propelling machinery for suction dredge, and for ponton pipe line, will be received here until 2 p m., Jan. 15, 1903 and then opened. Information furnished on application. MASON M. PATRICK, Capt., Engrs. Jan 8.

U. S. Engineer Office, Buffalo, N.Y., Dec. 22, 1902. Sealed proposals for channel and basin excavation in Lake Erie entrance to Black Rock Harbor and Erie Basin at Buffalo, N.Y., will be received here until 11 a. m. January 22, 1903, and then opened. Information furnished on application. T. W. SYMONS, Major, Engrs. Jan. 15.

Ship Draftsman.

Wanted young man for a point on Lake Michigan. Must be an accurate, clean worker, with ship yard office training, familiar with ordering material and the usual ship calculations. Address, stating age, experience and salary expected. Box 36, Marine Review Pub. Co., 39-41 Wade building, Cleveland, O. Dec 25

Engine for Sale.

Two right and left Williams high-speed engines; 13x18-in. cylinders. Have two fly wheels on each engine; in good running order. They develop 100 H. P. each. Length over all, 14 ft. 2 in.; width, 10 ft. 3 in. T. H. Elam, Library Building, St. Paul, Minn. t.f.

High-Pressure Engine For Sale.

One high pressure engine taken from the steamer Eugene C. Hart. Size 22x 26 in. Will be sold at a bargain. Address Hart Steamboat Line. Green Bay, Wis. tf

Steam Barge Faustin For Sale.

For sale steam barge Faustin. Lumber capacity 225,000 ft.; coal 400 tons. Steeple compound engine. Boiler allowed 123 lbs. steam. Boat equipped with electric lights, steam steerer, steam hoisting machinery for handling salt or other freight. For particulars address J. M. Shackett, Marine City, Mich., or J. T. Solon, Toledo, O. Jan 15

Tug for Sale or Exchange.

Tug having good 14x16 engine. Will sell cheap or exchange for a larger one and pay some difference. Must not draw over 8 ft. Address Chas. Donahue, 520 Prospect street, Lorain, O Dec 25

Schooner Helvetia for Sale.

For sale—Schooner Helvetia. Carrying capacity 1,500 tons ore or one million feet of lumber. Laid up in Cleveland. Address H. J. Johnson, 1015 Society for Savings, Cleveland. Jan 8

Two Tugs For Sale.

Tug John Johnson—Engine 20½x22; boiler allowed 120 lbs. steam. Tug Warwick—Engine 15 by 17; boiler allowed 110 lbs. steam. Both boats, engines and boilers practically new and in first-class condition. Boats can be seen at Toledo any time. Cheap for cash. Enquire of James Rooney, 1118 Collingwood Ave., Toledo, O. tf

Tug for Sale.

Tug Ada Barrett, 21 gross tons, about 10½ net. Cylinders 13 by 14. About 7-ft. draught. Boat recently rebuilt and in excellent condition. For full particulars address Mitchell & McClure, Duluth, Minn. Jan. 15.

Steamer Crystal for Sale.

For Sale.—Side-wheel steamer Crystal, capacity, 1,200. Thoroughly equipped. In good condition. Joseph H. Rebstock, 584 Main street, Buffalo, N. Y. t.f.

For Sale.

Steam yacht machinery and boiler. Boiler, Scotch marine type 34x58 in., 200 lbs. steam pressure; engine, one high pressure with cylinders 4x5 in. and two low pressure cylinders 6x5 in.; stem, post, bearing, shaft, wheel, boxes, etc.; in first-class order. Address T. H. Elam, Library Bldg., St. Paul, Minn. t.f.

New Boiler for Sale.

Horizontal tubular boiler, Atlas type, 72 in. by 20 ft.; twenty-six 6-in. flues; 150 lbs. steam pressure; 60,000 tensile strength. New, all complete with grates, fronts, stack, etc. This boiler was constructed by special orders and is first-class in every particular. Address T. H. Elam, Library Bldg., St. Paul, Minn. t.f.

BUYERS' DIRECTORY OF THE MARINE TRADE.

For a more complete classification than that represented by advertisers in the Marine Review and Marine Record, see the BLUE BOOK OF AMERICAN SHIPPING, marine and naval directory of the United States, published by the Marine Review Pub. Co., 39-41 Wade Bldg., Cleveland.

See accompanying index of Advertisers for full addresses of concerns in this directory.

AIR COMPRESSORS, AIR HOISTS, ETC.

Chicago Pneumatic Tool Co.....Chicago.
"Long Arm" System Co.....Cleveland.

AIR PUMPS AND APPLIANCES.

Fore River Ship & Engine Co.....Quincy, Mass.

ANCHORS.

Baldt Anchor Co.....Chester, Pa.
Bowers, L. M. & Co. .....Binghamton, N. Y.
DeGrauw, Aymar & Co. .....New York.
Seaboard Steel Casting Co.....Chester, Pa.

ANTI-FRICTION METALS.

Cramp, Wm. & Sons.....Philadelphia.
Hardy, Wm. A.....Fitchburg, Mass.
Phosphor Bronze Smelting Co., Ltd....Philadelphia.
Pittsburg White Metal Co. .....Pittsburg, Pa.

ARTIFICIAL DRAFT FOR BOILERS.

American Ship Building Co.....Cleveland.
Bloomsburg & Co., H.....Newport News, Va.
Buffalo Forge Co.....Buffalo.
Detroit Shipbuilding Co.....Detroit.
Sturtevant, B. F. Co.....Boston.

ASBESTOS.

Johns-Manville Co., H. W.....New York.

ATTORNEYS AND PROCTORS IN ADMIRALTY.

Bacon, H. H.....Buffalo.
Brown, Harvey L.....Buffalo.
Gilchrist, Albert J.....Cleveland.
Goulder, Holding & Masten.....Cleveland.
Hoyt, Dustin & Kelley.....Cleveland.
Kremer, C. E. .....Chicago.
MacDonald, Ray G.....Chicago.
McPherson, Clark, Campbell & Jarvis.....Toronto.
Pinney & Warner.....Cleveland.
Shaw, Warren, Cady & Oakes.....Detroit.
Spencer, H. R.,.....Duluth.
White, Johnson, McCaslin & Cannon.....Cleveland.

BANKERS.

Fahey & Co.....Cleveland.
Federal Trust Co. .....Cleveland.
Cleveland Trust Co.....Cleveland.

BAROMETERS, MARINE GLASSES, ETC.

Bliss, John & Co.....New York.
Coe, Almer.....Chicago.
Ritchie, E. S. & Sons.....Brookline, Mass.

BLOCKS, SHEAVES, ETC.

Boston & Lockport Block Co.....Boston, Mass.
Cleveland Block Co.....Cleveland.

BLOWERS.

Buffalo Forge Co.....Buffalo.
Sturtevant, B. F. Co.....Boston.

BOAT BUILDERS.

Drein, Thos. & Son.....Wilmington, Del.
Gas Engine & Power Co. and Chas. L. Seabury & Co., Consolidated.....New York.
Kahnweiler's Sons, David.....New York.
Lane & DeGroot.....Long Island City, N. Y.
Marine Construction & D. D. Co., ...Mariner's Harbor, S. I., N. Y.
Marine Iron Works.....Chicago.
Truscott Boat Mfg. Co.....St. Joseph, Mich.
Warrington Iron Works..... .....Chicago.
Willard, Chas. P. & Co.....Chicago.

BOILER MANUFACTURERS.

Almy Water Tube Boiler Co.....Providence, R. I.
American Ship Building Co.....Cleveland.
Atlantic Works.....East Boston, Mass.
Babcock & Wilcox Co.....New York.
Bath Iron Works, Ltd.....Bath, Me.
Boyer's Sons, L.....New York.
Chicago Ship Building Co.....Chicago.
Cramp, Wm. & Sons.....Philadelphia.
Delauney Belleville & Co.....St. Denis, France.
Detroit Shipbuilding Co.....Detroit.
Fletcher, W. & A. Co.....Hoboken, N. J.
Fore River Ship & Engine Co.....Quincy, Mass.
Gas Engine & Power Co.....Morris Heights, N. Y.
Harlan & Hollingsworth Co.....Wilmington, Del.
Jenks Ship Building Co.....Port Huron, Mich.
Kingsford Foundry & Machine Works..Oswego, N. Y.
Lake Erie Boiler Works.....Cleveland.
Long & Murphy Boiler Co.....Cleveland.
MacKinnon Mfg. Co.....Bay City, Mich.
Marine Iron Works..... .....Chicago.
Maryland Steel Co.....Sparrow's Point, Md.
Milwaukee Dry Dock Co. .....Milwaukee.
Moran Bros. Co.....Seattle, Wash.
Mosher, Chas. D.....New York.
Neafie & Levy Ship & Engine Building Co...Phila.
Newport News Ship Building Co..Newport News, Va.
Nixon, Lewis .....Elizabeth, N. J.
Pusey & Jones Co.....Wilmington, Del.
Risdon Iron Works .....San Francisco.
Roberts Safety Water Tube Boiler Co...New York.
Stirling, The Co.....Chicago.
Superior Ship Building Co.....Superior, Wis.
Taylor Water Tube Boiler Co.....Detroit.
Trigg, Wm. R Co.....Richmond, Va.
Tunnel City Boiler Works .....Port Huron, Mich.
Union Machine & Boiler Co.....Cleveland.
Warrington Iron Works.....Chicago.
Willard, Chas. P. & Co .....Chicago.

BOILER COMPOUNDS.

Dearborn Drug & Chemical Works.....Chicago.
Engel & Fagersten .....Chicago.

BOILER COVERING.

Johns-Manville Co., H. W.....New York.

BOILER FEEDING SYSTEM.

Moore & Handley Hardware Co...Birmingham, Ala.

BOILER FURNACES, FIRE FRONTS, ETC.

Continental Iron Works .....New York.

BOILER RIVETS.

Bourne-Fuller Co.....Cleveland.

BOILER STAYBOLTS, IRON OR STEEL, HOLLOW OR SOLID.

Falls Hollow Staybolt Co. .....Cuyahoga Falls, O.

BRASS AND BRONZE CASTINGS.

Cramp, Wm. & Sons .....Philadelphia.
Fore River Ship & Engine Co.....Quincy, Mass.
Phosphor Bronze Smelting Co. .....Philadelphia.

BRASS—SHEET, ROD, ETC.

Waterbury Brass C .....New York.

BRASS WORK, MARINE.

Farnan Brass Works .....Cleveland.

BRIDGES, BUILDERS OF

Scherzer Rolling Lift Bridge Co. .....Chicago.

BUCKETS, ORE AND COAL.

Bartlett & Snow Co., C. O. .....Cleveland.
Brown Hoisting & Conveying Machine Co. Cleveland.
Lake Erie Boiler Works.....Cleveland.
Long & Murphy Boiler Co.....Cleveland.
Webster, Camp & Lane Co.....Akron, O.

CABIN AND CABINET FINISHING WOODS.

Martin-Barriss Co.....Cleveland.

CAPSTANS.

American Ship Windlass Co.....Providence, R. I.
Hyde Windlass Co. .....Bath, Me.

CAST IRON PIPE.

Wood & Co., R. D. .....Philadelphia.

CEMENT, IRON, FOR REPAIRING LEAKS.

Smooth-On Mfg. Co. .....Jersey City, N. J.

CHAINS.

Lebanon Chain Works.....Lebanon, Pa.
Newhall Chain Forge & Iron Co. .....New York.
Standard Chain Co. .....Pittsburg.

CHAIN HOISTS.

Boston & Lockport Block Co. .....Boston, Mass.

CIRCULATOR, EQUILIBRIUM,

With Steam Heating Attachment.
Bloomsburg & Co., H. .....Baltimore, Md.

CLOCKS (Marine), CHRONOMETERS, BELLS.

Ashton Valve Co. .....Boston.
Bliss, John & Co. .....New York.
Chelsea Clock Co. .....Boston.
Ritchie, E. S. & Sons.....Brookline, Mass.

COAL PRODUCERS AND SHIPPERS.

Castner, Curran & Bullitt .....Boston.
Hanna, M. A. & Co. .....Cleveland.
Pickands, Mather & Co. .....Cleveland.
Pittsburg Coal Co. .....Cleveland.
Rochester & Pittsburg Coal & Iron Co. ....Buffalo.

COAL AND ORE HANDLING MACHINERY.

Bartlett & Snow Co., C. O. .....Cleveland.
Brown Hoisting Machinery Co., (Inc.)...Cleveland.
Lidgerwood Mfg. Co.....New York.
Webster, Camp & Lane Co.....Akron, O.

COMPASSES.

Bliss, John & Co. .....New York.
Ritchie, E. S. & Sons.....Brookline, Mass.

CONDENSER TUBE PACKING.

Allen, Joseph .....Collingswood, N. J.

COPPER, TIN AND SHEET IRON WORK.

Lake Erie Boiler Works.....Cleveland.
McCutcheon, C. H.....Buffalo.
Topky Brothers .....Ashtabula, O.
Viancourt, D. & Son.....Cleveland.

COPPER—SHEET, TUBES AND ROD.

Waterbury Brass Co.....New York.

CORDAGE.

Baker & Co., H. H.....Buffalo.
DeGrauw, Aymar & Co.....New York.
Upson-Walton Co.....Cleveland.

CORK JACKETS AND RINGS.

Armstrong Cork Co. .....Pittsburg, Pa.
Kahnweiler's Sons, D. .....New York.
Lane & DeGroot .....Long Island City, N. Y.

CORRESPONDENCE SCHOOLS.

Chicago Nautical School.....Chicago.

CHAIN CONVEYORS, HOISTS.

Bartlett & Snow Co., C. O. .....Cleveland.
Brown Hoisting Machinery Co., (Inc.)...Cleveland.
Chicago Pneumatic Tool Co. .....Chicago.
General Electric Co. .....Schenectady, N. Y.
Lidgerwood Mfg. Co.....New York.
Q. & C. Co. .....Chicago.
Westinghouse Electric & Mfg. Co. .....Pittsburg.
Wood & Co., R. D. .....Philadelphia.

DEAD-LIGHTS, AIR-PORTS, ETC.

"Long-Arm" System Co. .....Cleveland.

DRAWING MATERIALS.

Schwencke, Kirk & Co.....New York.

DREDGING, PILE DRIVING, ETC.

Cuyahoga Contracting Co. .....Cleveland.

DIVING APPARATUS.

Morse, A. J. & Son.....Boston.
Schrader's Son, A. .....New York.

DRILL PRESSES—DRILLS OF ALL KINDS.

Cleveland Punch & Shear Works Co. ....Cleveland.
Q. & C. Co. .....Chicago.

DRYING APPARATUS.

Buffalo Forge Co.....Buffalo.
Sturtevant, B. F. Co. .....Boston.

DRY DOCKS.

American Ship Building Co. .....Cleveland.
Atlantic Works .....East Boston, Mass.
Baltimore Ship Building Dry Dock Co...Baltimore.
Bath Iron Works, Ltd. .....Bath, Me.
Buffalo Dry Dock Co. .....Buffalo.
Chicago Ship Building Co. .....Chicago.
Craig Ship Building Co. .....Toledo, O.
Cramp, Wm. & Sons .....Philadelphia.
Detroit Ship Building Co. .....Detroit.
Harlan & Hollingsworth Co. ....Wilmington, Del.
Lockwood Mfg. Co. .....East Boston, Mass.
Manitowoc Dry Dock Co.....Manitowoc, Wis.
Marine Construction & Dry Dock Co. ....New York.
Maryland Steel Co. .....Sparrow's Point, Md.
Milwaukee Dry Dock Co. .....Milwaukee.
Moran Bros. Co. .....Seattle, Wash.
Newport News Ship Building Co. Newport News, Va.
Nixon, Lewis .....Elizabeth, N. J.
Pusey & Jones Co. .....Wilmington, Del.
Shipowners Dry Dock Co. .....Chicago.
Superior Ship Building Co.....Superior, Wis.

ELECTRIC HOISTS AND CRANES.

Elwell-Parker Electric Co. .....Cleveland.
Fort Wayne Electric Works ....Fort Wayne, Ind.
General Electric Co. .....Schenectady, N. Y.
Lidgerwood Mfg. Co.....New York.
Westinghouse Electric & Mfg. Co. ..Pittsburg, Pa.

ELECTRIC FIXTURES AND APPLIANCES.

General Electric Co. .....Schenectady, N. Y.
Page Bros. & Co. .....Boston.
Seidler-Miner Electric Co. .....Detroit.
United Marine Mfg. & Supply Co.....New York.
Westinghouse Electric & Mfg. Co.....Pittsburg, Pa.

ELECTRIC LIGHT AND POWER PLANTS.

Buffalo Forge Co. .....Buffalo.
Electro-Dynamic Co. .....Philadelphia.
Elwell-Parker Electric Co. .....Cleveland.
Fort Wayne Electric Works.....Fort Wayne, Ind.
General Electric Co. .....Schenectady, N. Y.
Seidler-Miner Electric Co.....Detroit.
Sturtevant, B. F. Co. .....Boston.
United Marine Mfg. & Supply Co.....New York.
Westinghouse Electric & Mfg. Co....Pittsburg, Pa.

ELECTRIC STEERING GEAR, SPEED AND RUDDER INDICATORS, ETC.

Electro-Dynamic Co. .....Philadelphia.

ENGINE BUILDERS, MARINE.

American Ship Building Co.....Cleveland.
Atlantic Works .....East Boston, Mass.
Bath Iron Works, Ltd. .....Bath, Me.
Bell Engineering Works, David .....Buffalo.
Buffalo Forge Co. .....Buffalo.
Chicago Ship Building Co.....Chicago.
Chase Machine Co. .....Cleveland.
Craig Ship Building Co. .....Toledo, O.
Cramp, Wm. & Sons .....Philadelphia.
Dake Engine Co.....Grand Haven, Mich.
Detroit Ship Building Co. .....Detroit
Fletcher, W. & A. Co. .....Hoboken, N. J.
Fore River Ship & Engine Co.....Quincy, Mass.
Gas Engine & Power Co. and Chas. L. Seabury & Co., Consolidated.....New York.
Great Lakes Engineering Works.....Detroit, Mich.
Hall Bros. .....Philadelphia.
Harlan & Hollingsworth Co. ....Wilmington, Del.
Jenks Ship Building Co. .....Port Huron, Mich.
Lake Shore Engine Works .....Marquette, Mich.
Lockwood Mfg. Co. .....East Boston, Mass.
Marine Iron Works.....Chicago.
MacKinnon Mfg. Co. .....Bay City, Mich.
Maryland Steel Co. .....Sparrow's Point, Md.
Milwaukee Dry Dock Co. .....Milwaukee.
Moran Bros. Co. .....Seattle, Wash.
Mosher, Chas. D. .....New York.
Neafie & Levy Ship & Engine Bldg. Co. Philadelphia.
Newport News Ship Building Co. Newport News, Va.
Nixon, Lewis .....Elizabeth, N. J.
Pusey & Jones Co. .....Wilmington, Del.
Risdon Iron Works .....San Francisco.
Roach's Ship Yard .....Chester, Pa.
Thropp, J. E. & Sons Co. .....Trenton, N. J.
Sheriffs Mfg. Co. .....Milwaukee.
Superior Ship Building Co.....Superior, Wis.
Trigg, Wm. R. Co.....Richmond, Va.
Trout, H. G. .....Buffalo.
Warrington Iron Works .....Chicago.
Willard, Chas. P. & Co. .....Chicago.

BUYERS' DIRECTORY OF THE MARINE TRADE.—Continued.

ENGINE ROOM TELEGRAPH, CALL BELLS, ETC.

Cory, Chas. & Son .....New York.
Electro-Dynamic Co. .....Philadelphia.
Detroit Electric Signal Co. .....Detroit.
Seidler-Miner Electric Co. .....Detroit.

ENGINEERING BOOKS.

Audel & Co., Theo.....New York.
Marine Review Pub. Co.....Cleveland.

ENGINEERING SPECIALTIES AND SUPPLIES.

Crane Co. .....Chicago.
Farnan Brass Works .....Cleveland.
Kieley & Mueller .....New York.
McCutcheon, C. H. .....Buffalo.
Reilly Repair & Supply Co., James.....New York.

ENGINEERS, MARINE, MECHANICAL, CONSULTING.

Electro-Dynamic Co. .....Philadelphia.
Garrett-Cromwell Engineering Co.....Cleveland.
Gaskin, Edward .....Buffalo.
Goodenough, Walter .....New York.
Hall Bros. .....Philadelphia.
Hunt, Robt. W. & Co. .....Chicago.
Kidd, Joseph .....Duluth, Minn.
Logan, Robert .....Cleveland.
Mosher, Chas D. .....New York.
Newman, R. L.....New York.
Pittsburg Testing Laboratory, Ltd.....Pittsburg.
Powell, Ambrose V. .....Chicago.
Roelker, H. B. .....New York.
Sadler, Perkins & Field.....New York.
See, Horace .....New York.
Wood, W. J. .....Chicago.

EVAPORATING AND DISTILLING APPARATUS.

Reilly Repair & Supply Co., James....New York.

FANS FOR VENTILATION, EXHAUST, ETC.

Buffalo Forge Co. .....Buffalo.
Sturtevant, B. F. Co. .....Boston.

FEED WATER PURIFIERS AND HEATERS.

Learmonth, Robert .....Buffalo.
Reilly Repair & Supply Co., James.....New York.
Ross Valve Co. .....Troy, N. Y.

FIXTURES FOR LAMPS, OIL AND ELECTRIC.

General Electric Co. .....Schenectady, N. Y.
Page Bros. & Co. .....Boston.
Seidler-Miner Electric Co. .....Detroit.
Westinghouse Electric & Mfg. Co....Pittsburg, Pa.

FORGES.

Buffalo Forge Co. .....Buffalo.
Sturtevant, B. F. Co. .....Boston.

FORGINGS FOR CRANK, PROPELLER OR THRUST SHAFTS, ETC.

Cleveland City Forge & Iron Co. .....Cleveland.
Fore River Ship & Engine Co. .....Quincy, Mass.

FLUE WELDING.

Fix's, S. Sons .....Cleveland.

FURNACES FOR BOILERS.

Continental Iron Works.....New York.

FUELING COMPANIES AND COAL DEALERS.

Castner, Curran & Bullitt (Pocahontas) ....Phila.
Hanna, M. A. & Co. .....Cleveland.
Pickands, Mather & Co. .....Cleveland.
Pittsburg Coal Co. .....Cleveland.
Rochester & Pittsburg Coal & Iron Co. ....Buffalo.
Smith, Stanley B. & Co. .....Detroit.
Youghiogheny & Lehigh Valley Coal Co...Chicago.

GAS BUOYS.

Safety Car Heating & Lighting Co. ..New York.

GAS AND GASOLINE ENGINES.

Chase Machine Co. .....Cleveland.
Hall Bros. .....Philadelphia.
Lake Shore Engine Works.....Marquette, Mich.

GAGES, STEAM AND VACUUM.

American Steam Gauge Co. .....Boston.
Ashton Valve Co. .....Boston.

GRAPHITE.

Dixon Crucible Co., Joseph .....Jersey City, N. J.

HAMMERS, STEAM.

Bell Engineering Works, David .....Buffalo.
Chase Machine Co. .....Cleveland.
Q. & C. Co. .....Chicago.

HARDWARE, SHIP.

Topky Brothers .....Ashtabula, O.

HATCH GEARS.

"Long-Arm" System Co. .....Cleveland.

HEATING APPARATUS.

Buffalo Forge Co. .....Buffalo.
Sturtevant, B. F. Co. .....Boston.

HOISTS FOR CARGO, ETC.

American Ship Building Co.....Cleveland.
Brown Hoisting Machinery Co., Inc. ....Cleveland.
Chase Machine Co. .....Cleveland.
Elwell-Parker Electric Co. .....Cleveland.
General Electric Co. .....New York.
Hyde Windlass Co. .....Bath, Me.
Lidgerwood Mfg. Co.....New York.
Marine Iron Co. .....Bay City.
Westinghouse Electric & Mfg. Co....Pittsburg, Pa.

HOLLOW STAYBOLT IRON.

Falls Hollow Staybolt Co.....Cuyahoga Falls, O.

HOSE FITTINGS.

Farnan Brass Works. .....Cleveland.

HYDRAULIC MACHINERY.

Watson-Stillman Co., The.....New York.
Wood & Co., R. D. .....Philadelphia.

ICE MACHINERY.

American Linde Refrigerating Co. .....New York.
Roelker, H. B. .....New York.

INDICATORS FOR STEAM ENGINES.

American Steam Gauge Co. .....Boston.
Ashton Valve Co. .....Boston.

INJECTORS.

Crane Co. .....Chicago.
Jenkins Bros. .....New York.
Lunkenheimer Co. .....Cincinnati.

INSURANCE, MARINE.

Brown & Co. .....Buffalo.
Brown, W. W. .....Cleveland.
Dunham, R. J. .....Chicago.
Elphicke, C. W. & Co. .....Chicago.
Hawgood & Co., W. A. .....Cleveland.
Hutchinson & Co. .....Cleveland.
Insurance Co. of North America....Philadelphia
McCarthy, T. R. .....Montreal.
McCurdy, Geo. L. .....Chicago.
Mitchell & Co. .....Cleveland.
Peck, Chas. E. & W. F. ...New York and Chicago.
Richardson, W. C. .....Cleveland.
Sullivan, D. & Co. .....Chicago.
Weeks, F. H. .....New York.

IRON ORE AND PIG IRON.

Bourne-Fuller Co. .....Cleveland.
Hanna, M. A. & Co. .....Cleveland.
Pickands, Mather & Co. .....Cleveland.

LAUNCHES—STEAM, NAPHTHA, ELECTRIC.

Gas Engine & Power Co. .....New York.
Marine Construction & D. D. Co.....
.....Mariner's Harbor, S. I., N. Y.
Marine Iron Works.....Chicago.
Warrington Iron Works .....Chicago.
Willard, Chas. P. .....Chicago.

LIFE PRESERVERS, LIFE BOATS, BUOYS.

Armstrong Cork Co. .....Pittsburg.
Drein, Thos. & Son .....Wilmington, Del.
Kahnweiler's Sons, D. .....New York.
Lane & DeGroot .....Long Island City, N. Y.
Marine Construction & D. D. Co, Mariner's Harbor,..... .....S. I. N. Y.

LIGHTS, SIDE AND SIGNAL.

Helvig, H. A. J.....New York.
Page Bros. & Co. .....Boston.
Russell & Watson .....Buffalo.

LOGS.

Walker & Sons, Thomas .....Birmingham, Eng.
Nicholson Ship Log Co. .....Cleveland.
Also Ship Chandlers.

MACHINISTS.

Chase Machine Co.....Cleveland.
Macbeth Iron Co. .....Cleveland.
Union Machine & Boiler Co.....Cleveland.
Ward Machine Co.....Cleveland.

MACHINE TOOLS (WOOD WORKING).

Atlantic Works, Inc. .....Philadelphia.
Fay & Egan Co., J. A. .....Cincinnati.

MACHINERY, NEW AND SECOND HAND.

Bowler & Co. Geo. H. .....Cleveland.

MAN-HOLES, SWING DOORS, ETC.

"Long-Arm" System Co. .....Cleveland.

MARINE RAILWAYS, BUILDERS OF

Crandall & Son, H. I. .....East Boston, Mass.

MATTRESSES, CUSHIONS, BEDDING.

Fogg, M. W.....New York.

MECHANICAL DRAFT FOR BOILERS.

American Ship Building Co. .....Cleveland
Bloomsburg & Co., H. .....Baltimore, Md.
Buffalo Forge Co. .....Buffalo.
Detroit Ship Building Co. .....Detroit
Steam Boiler Equipment Co. .....New York.
Sturtevant, B. F. Co. ....Boston.

METALLIC PACKING.

Allen, Joseph .....Collingswood, N. J.
Bestosking Packing & Supply Co. .....Boston.
Katzenstein, L. & Co. .....New York.
U. S. Metallic Packing Co. .....Philadelphia.

METAL POLISH.

Bertram's Oil Polish Co. .....Boston.

MOTORS, GENERATORS—ELECTRIC.

Buffalo Forge Co. .....Buffalo.
Electro-Dynamic Co. .....Philadelphia.
Elwell-Parker Electric Co. .....Cleveland.
Fort Wayne Electric Works .....Fort Wayne, Ind.
General Electric Co. .....Schenectady, N. Y.
"Long-Arm" System Co. .....Cleveland.
Seidler-Miner Electric Co. .....Detroit.
Sturtevant, B. F. Co. .....Boston.
United Marine Mfg. & Supply Co.....New York.
Westinghouse Electric & Mfg. Co....Pittsburg, Pa.

NAUTICAL INSTRUMENTS.

Bliss, John & Co. .....New York.
Ritchie, E. S. & Sons .....Brookline, Mass.

NAVAL ARCHITECTS.

Gaskin, Edward .....Buffalo.
Goodenough, Walter .....New York.
Kidd, Joseph .....Duluth, Minn.
Logan, Robert .....Cleveland.
Mosher, Chas. D. .....New York.
Newman, R. L. .....New York.
Sadler, Perkins & Field.....New York
See, Horace.....New York.
Wood, W. J. .....Chicago.

NAVAL STORES.

Day, Britton T. & S. P. Day.....Cleveland.

OAKUM.

DeGrauw, Aymar & Co. .....New York.
Stratford Oakum Co.,.....Jersey City, N. J.

OILS AND LUBRICANTS.

Dixon Crucible Co., Joseph .....Jersey City, N. J.
Standard Oil Co. .....Cleveland.

OIL FILTERS.

Haines Co., W. S. .....Philadelphia.

PACKING.

Allen, Joseph .....Collingswood, N. J.
Bestosking Packing & Supply Co. .....Boston.
Crane Co. .....Chicago.
Jenkins Bros. .....New York.
Katzenstein, L. & Co. .....New York.
United States Metallic Packing Co. ....Philadelphia.

PAINTS.

Baker, Howard H. & Co .....Buffalo.
Berry Bros., Ltd. .....Detroit.
Day's Varnish & Dryer Co. .....Cleveland.
Mohawk Paint & Chemical Co. ..... New York.
New Jersey Zinc Co. .....New York.
Topky Brothers .....Ashtabula, O.
Upson-Walton Co. .....Cleveland.

PATENT ATTORNEYS.

Thurston & Bates .....Cleveland.

PATTERN SHOP MACHINERY.

Atlantic Works, Inc. .....Philadelphia.
Fay & Egan Co., J. A. .....Cincinnati.

PIPE—BRASS AND COPPER, IRON PIPE SIZE.

Waterbury Brass Co.....New York.

PIPE, WROUGHT IRON.

Bourne-Fuller Co .....Cleveland.
Crane Co .....Chicago.

PIPE, CAST IRON.

Wood & Co., R. D. .....Philadelphia.

PLANING MILL MACHINERY.

Atlantic Works, Inc. .....Philadelphia.
Fay & Egan Co., J. A. .....Cincinnati.

PLATE BENDING AND PLANING MACHINES.

Wood & Co., R. D. .....Philadelphia.

PLUMBING, MARINE.

Mott, J. L., Iron Works .....New York.
Reilly Repair & Supply Co., James....New York.
Sands, Alfred B. & Son .....New York.

PNEUMATIC TOOLS.

Allen, John F., ... New York.
Chicago Pneumatic Tool Co. .....Chicago.
Q. & C. Co. .....Chicago.

POLISH FOR METALS.

Bertram's Oil Polish Co.....Boston.

POWER DOORS AND HATCHES.

"Long-Arm" System Co. .....Cleveland.

PRESSURE REGULATORS.

Kieley & Mueller .....New York.
Ross Valve Co. .....Troy, N. Y.

BUYERS' DIRECTORY OF THE MARINE TRADE.—Continued.

PROPELLER WHEELS.

American Ship Building Co. .....Cleveland
Atlantic Works .....East Boston, Mass.
Baltimore Ship Building & Dry Dock Co. Baltimore.
Bath Iron Works, Ltd. .....Bath, Me.
Cramp, Wm. & Sons.....Philadelphia.
Detroit Ship Building Co. .....Detroit.
Fore River Ship & Engine Co. .....Quincy, Mass.
Great Lakes Engineering Works.....Detroit.
Hyde Windlass Co. .....Bath, Me.
Harlan & Hollingsworth Co.....Wilmington, Del.
Jenks Ship Building Co. .....Port Huron, Mich.
Lockwood Mfg. Co. .....East Boston, Mass.
MacKinnon Mfg. Co. .....Bay City, Mich.
Marine Iron Works .....Chicago.
Maryland Steel Co. .....Sparrow's Point, Md.
Milwaukee Dry Dock Co. .....Milwaukee.
Moran Bros. Co. .....Seattle, Wash.
Neafie & Levy Ship & Engine Bldg. Co.....Phila.
Newport News Ship Bldg. Co...Newport News, Va.
Nixon, Lewis .....Elizabeth, N. J.
Phosphor Bronze Smelting Co., Ltd...Philadelphia.
Pusey & Jones Co. .....Wilmington, Del.
Risdon Iron Works .....San Francisco.
Roelker, H. B. .....New York.
Sheriffs Mfg. Co. .....Milwaukee.
Superior Ship Building Co.....Superior, Wis.
Thropp & Sons Co., J. E. .....Trenton, N. J.
Trigg, Wm. R. Co. .....Richmond, Va.
Trout, H. G. .....Buffalo.

PROJECTORS, ELECTRIC.

Elwell-Parker Electric Co. .....Cleveland.
Fort Wayne Electric Works.....Fort Wayne, Ind.
General Electric Co. .....Schenectady, N. Y.
Seidler-Miner Electric Co. .....Detroit.
Westinghouse Electric & Mfg. Co....Pittsburg, Pa

PUMPS FOR VARIOUS PURPOSES.

Blake, Geo. F. Mfg. Co. .....New York.
Great Lakes Engineering Works.....Detroit.
Kingsford Foundry & Machine Wks. Oswego, N. Y.
Wood, R. D. & Co. .....Philadelphia.

PUNCHES, RIVETERS, SHEARS.

Chicago Pneumatic Tool Co. .....Chicago.
Wood, R. D. & Co. .....Philadelphia.

REFRIGERATING APPARATUS.

Roelker, H. B. .....New York.

REGISTER FOR CLASSIFICATION OF VESSELS.

Great Lakes Register .....Cleveland.
Record of American & Foreign Shipping.New York.

RELEASING HOOKS FOR DETACHING BOATS.

Standard Automatic Releasing Hook Co. New York.

RIVETS, STEEL, FOR SHIPS AND BOILERS.

Bourne-Fuller Co. .....Cleveland.

RANGES.

Russell & Watson .....Buffalo.

RIVETS—BRASS AND COPPER.

Waterbury Brass Co.....New York.

RUBBER INSULATED WIRES.

Roebling's Sons, Jno. A...New York and Cleveland.

SAFETY VALVES.

American Steam Gauge Co. .....Boston.
Ashton Valve Co.....Boston.
Lunkenheimer Co. .....Cincinnati.

SAIL MAKERS.

Baker, Howard H. & Co. .....Buffalo.
Upson-Walton Co. .....Cleveland.
Wilson & Silsby .....Boston.

SALVAGE COMPANIES.

See Wrecking Companies.

SCHOOLS—NAUTICAL, ENGINEERING.

Buffalo Com. & Electro-Mechanical Inst...Buffalo.
Chicago Nautical School .....Chicago.
Capt. S. W. Gould.....Cleveland.

SEARCH LIGHTS.

Elwell-Parker Electric Co. .....Cleveland.
Fort Wayne Electric Works.....Fort Wayne, Ind.
General Electric Co. .....Schenectady, N. Y.
Seidler-Miner Electric Co. .....Detroit.
Westinghouse Electric & Mfg. Co....Pittsburg, Pa.

SHEARS.

See Punches, Rivets, and Shears.

SHIP AND BOILER PLATES AND SHAPES.

Bourne-Fuller Co. .....Cleveland.

SHIP BUILDERS.

American Ship Building Co. .....Cleveland.
Atlantic Works .....East Boston, Mass.
Baltimore Ship Building & Dry Dock Co..Baltimore.
Bath Iron Works, Ltd.....Bath, Me.
Bell Engineering Works, David .....Buffalo.
Buffalo Dry Dock Co. .....Buffalo.
Cramp, Wm. & Sons.....Philadelphia.
Craig Ship Building Co. .....Toledo, O.
Chicago Ship Building Co.....Chicago.
Detroit Ship Building Co. .....Detroit.
Fore River Ship & Engine Co. .....Quincy, Mass.
Great Lakes Engineering Works.....Detroit.
Harlan & Hollingsworth Co. .....Wilmington, Del.
Jenks Ship Building Co. .....Port Huron, Mich.
Lockwood Mfg. Co.....East Boston, Mass.
Manitowoc Dry Dock Co.....Manitowoc, Wis.
Marine Construction & Dry Dock Co.....
.....Mariner's Harbor, S. I., N. Y.
Marine Iron Works .....Chicago.
Maryland Steel Co .....Sparrow's Point, Md.
Milwaukee Dry Dock Co.....Milwaukee.
Moran Bros. Co. .....Seattle, Wash.
Neafie & Levy Ship & Engine Bldg. Co.....Phila.
Newport News Ship Bldg. Co....Newport News, Va.
Nixon, Lewis .....Elizabeth, N. J.
Pusey & Jones Co. .....Wilmington, Del.
Risdon Iron Works .....San Francisco.
Roach's Ship Yard .....Chester, Pa.
Smith & Son, Abram .....Algonac, Mich.
Superior Ship Building Co.....Superior, Wis.
Trigg, Wm. R. Co. .....Richmond, Va.
Warrington Iron Works .....Chicago.
Willard, Chas. P. & Co. .....Chicago.

SHIP CHANDLERS.

Baker, Howard H. & Co. .....Buffalo.
Moran Bros. Co. .....Seattle, Wash.
Reilly Repair & Supply Co., James....New York.
Upson-Walton Co. .....Cleveland.

SHIP LANTERNS AND LAMPS.

Helvig, H. A. J.....New York.
Page Bros. & Co.....New York.
Russell & Watson.....Buffalo.

SMOOTH-ON COMPOUND, FOR REPAIRS.

Smooth-On Mfg. Co. .....Jersey City, N. J.

SPARS—LARGE SIZES.

Moran Bros. Co.....Seattle, Wash.

STAYBOLTS, IRON OR STEEL, HOLLOW, OR SOLID.

Falls Hollow Staybolt Co.....Cuyahoga Falls, O.

STEAM VESSELS FOR SALE.

Elwell, Jas. W. & Co.....New York.
Holmes, Samuel.....New York.
King, Rufus S.....New York.
McCarthy, T. R.....Montreal, Can.
Newman, R. L.....New York.
Weeks, F. H.....New York

STEAMSHIP LINES, PASS. AND FREIGHT.

American Line.....New York.
International Nav. Co.....Philadelphia.
Pere Marquette R. R. & S. S. Line.....Milwaukee.
Red Star Line.....New York.

STEEL CASTINGS.

Seaboard Steel Casting Co.....Chester, Pa.

STEERING APPARATUS.

American Ship Building Co.....Cleveland.
Chase Machine Co. .....Cleveland.
Dake Engine Co.....Grand Haven, Mich.
Detroit Shipbuilding Co.....Detroit.
Electro-Dynamic Co.....Philadelphia.
Hyde Windlass Co.....Bath, Me.
Jenks Ship Building Co.....Port Huron, Mich.
Queen City Engineering Co.....Buffalo.
Sheriff Mnfg. Co.....Milwaukee.

STOCKS, BONDS, SECURITIES.

Brown, W. W.....Cleveland.
Fahey & Co.....Cleveland.

SUBMARINE DIVING APPARATUS

Morse & Son, A. J.....Boston.
Schrader's Son, A.....New York.

SURVEYORS, MARINE.

Goodenough, Walter.....New York.
Gaskin, Edward.....Buffalo.
Newman, R. L.....New York.
See, Horace.....New York.
Wood, W. J.....Chicago.

TESTS OF MATERIAL.

Hunt, Robert W. & Co.....Chicago.
Pittsburg Testing Laboratory, Ltd.....Pittsburg.

TOOLS, METAL WORKING, FOR SHIP AND ENGINE WORKS.

Allen, John F. .....New York.
Chicago Pneumatic Tool Co.....Chicago.
Q. & C. Co.....Chicago.
Watson-Stillman Co.....New York.
Wood, R. D. & Co.....Philadelphia.

TOOLS, WOOD WORKING.

Atlantic Works, Inc.....Philadelphia.
Fay & Egan Co., J. A.....Cincinnati.

TOWING MACHINES.

American Ship Windlass Co.....Providence, R. I.
Chase Machine Co.....Cleveland.

TOWING COMPANIES.

Donnelly Salvage & Wrecking Co....Kingston, Ont.
Lake Shore Stone Co.....Milwaukee.
Midland Towing & Wrecking Co., Ltd.Midland, Ont.
Sincennes-McNaughton Line, Ltd....Montreal, Can.

TRAPS, STEAM.

Haines Co., Wm. S.....Philadelphia.
Kieley & Mueller.....New York.

TRUCKS.

Boston & Lockport Block Co..... .....Boston.

TUBING, SEAMLESS.

Benedict & Burnham Mnfg. Co....Waterbury, Conn.
National Tube Co.....Pittsburg.
Waterbury Brass Co.....New York.

VALVES, STEAM SPECIALTIES, ETC.

American Steam Gauge Co. .....Boston.
Ashton Valve Co. .....Boston.
Crane Co. .....Chicago.
Farnan Brass Works .....Cleveland.
Jenkins Bros.....New York.
Kieley & Mueller.....New York.
Lunkenheimer Co.....Cincinnati.
Ross Valve Co. .....Troy, N. Y.

VALVES FOR WATER AND GAS.

Wood & Co., R. D.....Philadelphia.
Ross Valve Co. .....Troy, N. Y.

VARNISHES.

Berry Brothers, Ltd.....Detroit.
Day's Varnish & Dryer Co. .....Cleveland.
New Jersey Zinc Co.....New York.
Also Ship Chandlers.

VESSEL AND FREIGHT AGENTS.

Roland, John J.....Buffalo.
Brown & Co.....Buffalo.
Brown, W. W.....Cleveland.
Dunham, R J..... .....Chicago.
Elwell, Jas. W. & Co.....New York.
Elphicke, C. W & Co.....Chicago.
Hall & Root.....Buffalo.
Hawgood & Co., W. A.....Cleveland.
Holmes, Samuel.....New York.
Hutchinson & Co.....Cleveland.
King, Rufus S.....New York.
McCarthy, T. R.....Montreal.
Newman, R. L.....New York.
Mitchell & Co.....Cleveland.
Richardson, W. C.....Cleveland.
Sullivan, D. & Co.....Chicago.
Weeks, F. H.....New York.

VENTILATING APPARATUS FOR SHIPS.

Buffalo Forge Co. .....Buffalo.
Sturtevant, B. F. Co.....Boston.

WIRE—BRASS AND COPPER.

Waterbury Brass Co.....New York.

WIRE ROPE AND WIRE ROPE FITTINGS.

Baker, H. H. & Co.....Buffalo.
DeGrauw, Aymar & Co. .....New York
Roebling's Sons John A....New York and Cleveland.
Upson-Walton Co.....Cleveland.

WHISTLES, STEAM.

American Steam Gauge Co. .....Boston.
Ashton Valve Co. .....Boston.
Farnan Brass Works .....Cleveland.
Lunkenheimer Co.....Cincinnati.

WHITE METAL—SHEETS, RODS AND WIRE.

Waterbury Brass Co.....New York.

WINDLASSES.

American Ship Windlass Co.....Providence, R. I.
American Ship Building Co. .....Cleveland
Hyde Windlass Co.....Bath, Me.
Jenks Ship Building Co.....Port Huron, Mich.

WINCHES.

American Ship Windlass Co.....Providence, R. I.
Hyde Windlass Co.....Bath, Me.

WOOD WORKING MACHINERY.

Atlantic Works, Inc.....Philadelphia.
Fay & Egan Co., J. A.....Cincinnati.

WRECKING AND SALVAGE COMPANIES.

Cuyahoga Contracting Co.....Cleveland.
Donnelly Salvage & Wrecking Co....Kingston, Ont.
Lake Shore Stone Co.....Milwaukee.
Midland Towing & Wrecking Co., Ltd.Midland, Ont.

YACHT SAILS, FITTINGS, HARDWARE, ETC.

Wilson & Silsby.....Boston.

YACHT AND BOAT BUILDERS.

Bell Engineering Works, David .....Buffalo.
Drein, Thos. & Son.....Wilmington, Del.
Gas Engine & Power Co..... New York.
Lane & DeGroot.....Long Island City, N. Y.
Marine Construction & Dry Dock Co. ...New York.
Marine Iron Works.....Chicago.
Truscott Boat Mfg. Co. .....St. Joseph, Mich.
Warrington Iron Works.....Chicago.
Williard, Chas. P. & Co.....Chicago.

YAWLS.

Drein, Thos. & Son.....Wilmington, Del.
Lane & DeGroot.....Long Island City, N. Y.

ALPHABETICAL INDEX OF ADVERTISERS IN THE MARINE REVIEW AND MARINE RECORD.

The star (*) indicates that the advertisement appears alternate weeks. For addresses see advertisements on pages noted.

Allen, John F. 11
Allen, Joseph 3
Almy Water Tube Boiler Co. 15
American Line 8
American Ship Building Co. 1
American Ship Masters Ass'n..... 6
American Ship Windlass Co. 2
American Steam Gauge Co. 1
Armstrong Cork Co. 48
Ashton Valve Co. 16
Atlantic Works 5
*Atlantic Works, Inc. 11
Audel & Co, Theo.,..... 36

Babcock & Wilcox Co. 15
Bacon, H. H. 40
Baldt Anchor Line 9
Baltimore Ship Building & Dry Dock Co. 4
Baker, Howard H. & Co. 48
Bartlett & Snow Co., C. O..... 2
Bath Iron Works, Ltd. 1
Bell, David, Engineering Works.. 7
Benedict & Burnham Mfg. Co.... 16
Bertram's Oil Polish Co..... 1
Berry Brothers, Ltd. 33
*Bestosking Packing & Supply Co. 3
Blake, Geo. F., Mfg. Co. 9
*Bliss, John & Co. 13
*Bloomsburg & Co., H. 9
Boland, J. J. 40
*Boston & Lockport Block Co. .. 48
Bourne-Fuller Co. 16
Bowers, L. M. & Co. 9
Bowler & Co., Geo. H., ... 41
*Boyer's, L., Sons..... 13
Brown, Harvey L. 40
Brown & Co. 40
Brown Hoisting Machinery Co., Inc. 2
Brown, W. W. 40
Buffalo Commercial & Electro-Mechanical Institute 9
Buffalo Dry Dock Co. 46
Buffalo Forge Co. 16

Castner, Curran & Bullitt 39
Chase Machine Co. 8
*Chelsea Clock Co. 3
Chicago Nautical School..... 12
Chicago Pneumatic Tool Co. 16
Chicago Ship Building Co. 46
Cleveland & Pittsburgh Mining & Development Co. 36
Cleveland City Forge & Iron Co... 38
Cleveland Trust Co..... 34
Coe, Almer 3
Continental Iron Works 2
Cory, Chas. & Son 12
*Craig Ship Building Co. 13
Cramp, Wm. & Sons, S. & E. B. Co. 1
*Crandall & Son, H. I. 11
Crane Co. 11-15
Cuyahoga Contracting Co. 14

Dake Engine Co 12
Day, Britton T. & S. P..... 15
Dearborn Drug & Chemical Wks.. 13
DeGrauw, Aymar & Co. 9
Delauney, Belleville & Co..... 32
Delaware River Iron S. B. & E. Works. 5
Detroit Electric Signal Co. 6
Detroit Ship Building Co. 1
Dixon Crucible Co., Joseph 12
Donnelly Salvage & Wrecking Co. 7
Drein, Thos. & Son 4
Dunham, R. J. 40

Electro-Dynamic Co. 1
Elphicke, C. W. & Co. 40
Elwell, Jas. W., & Co. 40
Elwell-Parker Electric Co. 2
Engel & Fagersten 11

Fahey & Co. 37
Falls Hollow Staybolt Co. 4
Farnan Brass Works 12
Fay & Eagan Co., J. A. 11
Federal Trust Co..... 34
Fix's, S., Sons 37
Fletcher, W. & A. Co 4
Fogg, M. W. 11
Fore River Ship & Engine Co. ... 5
Fort Wayne Electric Works 6

Garrett-Cromwell Engineering Co.. 3
Gas Engine & Power Co. and Chas. L. Seabury & Co., Consolidated. 10
Gaskin, Edward 41
General Electric Co. 16
Gilchrist, Albert J. 40
Goodenough, Walter 41
Gould, Capt. S. W 12
Goulder, Holding & Masten 40
Great Lakes Engineering Works.. 47
Great Lakes Register 7

Haines Co., Wm. S. 37
Hall Bros. 8
Hall & Root 40
Hanna, M. A. & Co. 38
Hardy, Wm. A. 14
Harlan & Hollingsworth Co., The. 5
Hawgood & Co., W. A. 40
Helvig, H. A. J..... 4
Herriman, F. D. 10
Holmes, Samuel 40
Hoyt, Dustin & Kelley 40
Hunt, Robert W. & Co. 41
Hutchinson & Co. 40
Hyde Windlass Co. 48

Insurance Co. of North America... 7
International Navigation Co..... 8

Jenkins Brothers 3-12
Jenks Ship Building Co. 47
Johns-Manville Co., H. W. 31
Joll, John C. 35

Kahnweiler's Sons, David 4
Katzenstein, L. & Co. 3
Kidd, Joseph 40
Kieley & Mueller 3
Kingsford Foundry & Machine Works 13
King, Rufus S..... 40
Kremer, C. E. 40

Lake Erie Boiler Works 14
Lake Shore Engine Works 8
Lake Shore Stone Co..... 45
Lang, Sydney B. 47
Lane & DeGroot 4
*Learmonth, Robert 13
Lebanon Chain Works 10
Lidgerwood Mfg. Co. 6
Lockwood Mfg. Co. 4
Logan, Robert 41
"Long-Arm" System Co. 1
Long & Murphy Boiler Co. 9
L. S. & M. S. Ry. 45
Lunkenheimer Co. 35

McCarthy, T. R. 40
McCurdy, Geo. L. 7
McCutcheon, C. H. 47
McPherson, Clark, Campbell & Jarvis 40
Macbeth Iron Co. 8
MacDonald, Ray G. 40
MacKinnon Mfg. Co. 3
Manitowoc Dry Dock Co..... 31
Marine Construction & Dry Dock Co. 4
*Marine Iron Co. 10
Marine Iron Works, Chicago 10
Martin-Barriss Co. 9
Maryland Steel Co. 5
Midland Towing & Wrecking Co., Ltd. 48
Milwaukee Dry Dock Co. 46
Mitchell & Co..... 40
Mohawk Paint & Chemical Co ... 7
Moore & Handley Hardware Co... 12
* Moran Bros Co. 47
Morse & Son, A. J 37
Mosher, Chas. D..... 41
*Mott, J. L., Iron Works 10

National Tube Co. 14
Neafie & Levy Co. 5
*Newhall Chain Forge & Iron Co. 13
Newman, R. L..... 40
Newport News Ship Building & Dry Dock Co. 5
New Jersey Zinc Co. 7
Nicholson Ship Log Co. 3
Nixon, Lewis 5
North River Iron Works 4

Page Bros. & Co. 4
Peck, Chas. E. & W. F. 7
Pere Marquette R. R. & S. S. Line 47
Phosphor Bronze Smelting Co. Ltd. 14
Pickands, Mather & Co. 40
Pinney & Warner 40
Pittsburg Coal Co. 39
Pittsburg Testing Laboratory, Ltd. 41
Pittsburg White Metal Co. 35
Powell, Ambrose V. 40
Pusey & Jones Co. 5

Q. & C. Co..... 33
Queen City Engineering Co. 12

Record of American & Foreign Shipping 6
Red Star Line 8
Richardson, W. C. 40
*Reilly Repair & Supply Co. Jas. 8
Risdon Iron Works 5
*Ritchie & Sons, E. S. 13
Roach's Ship Yard 5
Roberts Water Tube Boiler Co... 15
Rochester & Pittsburg Coal & Iron Co. 39
*Roebling's, John A. Sons Co.... 48
Roelker, H. B. 5
Ross Valve Co. 37
Rudder Pub. Co 41
Russell & Watson 38

Sadler, Perkins & Field..... 41
Safety Car Heating & Lighting Co. 3
Sands, Alfred B. & Son 37
Scherzer Rolling Lift Bridge Co.. 2
Schrader's Sons, A. 9
Schwencke, Kirk & Co. 41
Seaboard Steel Casting Co. 33
See, Horace 41
Seidler-Miner Electric Co. 6
Shaw, Warren, Cady & Oakes.... 40
Sheriffs Mfg. Co. 10
Shipowners Dry Dock Co. 16
Sincennes-McNaughton Line, Ltd.. 1
Smith & Son, Abram 10
Smith, Stanley B. & Co. 39
*Smooth-On Mfg. Co. 36
Spencer, H. R 40
Standard Chain Co. 4
Standard Oil Co. 38
Standard Releasing Hook Co. ... 38
Steam Boiler Equipment Co. 9
Stirling Co. 15
Stratford Oakum Co., Geo. 6
Sturtevant, B. F. Co. 48
Sullivan & Co. 40
Superior Ship Building Co..... 36

Taylor Water Tube Boiler Co... 15
Thropp, J. E. & Sons Co. 37
Thurston & Bates 41
*Topky Bros.,.....37
Trigg Co., Wm. R. 5
Trout, H. G. 8
Truscott Boat Mfg. Co. 10
Tunnel City Boiler Works 14

Union Machine & Boiler Co..... 8
United Marine Mfg. & Supply Co.. 31
Upson-Walton Co. 43
U. S. Metallic Packing Co. 48

Viancourt, D. & Son 37

Walker, Thomas & Son 3
Ward Machine Co.....35
Warrington Iron Works 10
Waterbury Brass Co..... 48
*Watson-Stillman Co. 47
Webster, Camp, & Lane Co..... 2
Weeks, F. H. 40
Westinghouse Electric & Mfg. Co. 6
White, Johnson, McCaslin & Cannon 40
*Willard, Chas. P. & Co..... 13
Wilson & Silsby 5
Wood, W. J. 40
*Wood & Co., R. D. 13

Youghiogheny & Lehigh Coal Co.. 39

STURTEVANT SYSTEM OF MECHANICAL DRAFT.

32 *Saves cost of chimney.*
Burns cheap fuel.
Increases boiler capacity.
Send for Catalogue No 110.

B. F. STURTEVANT Co. BOSTON,
NEW YORK · PHILADELPHIA · CHICAGO · LONDON

Thearle's Works on Ship Building.

STANDARDS IN ENGLAND AND SCOTLAND.

KNOWN AND USED WHEREVER STEEL SHIPS ARE BUILT.

SEPARATE VOLUMES FOR PLATES.

"Ship Building in Iron and Steel." (Plates in separate volume.) $5.25.
"Ship Building and Laying Off." (Plates in separate volume.) $3.00.
"Theoretical Naval Architecture." (Plates in separate volume.) $3.50.

THE MARINE REVIEW PUB. CO.,
39-41 Wade Bldg., CLEVELAND

State of Ohio, County of Cuyahoga, } SS.

Good Rope vs. Cheap Rope.

TRIAL NOW ON.

Jurors: **All Vessel Men.**

THE UPSON-WALTON CO.

Are on the side of Good Rope.

What will be your Verdict! . . . . . .

THE MOST COMPLETE STOCK

BRASS and COPPER

in Sheets, Tubes, Wire and Rod.

Service Right, Quality Right, Prices Right

Waterbury Brass Co.

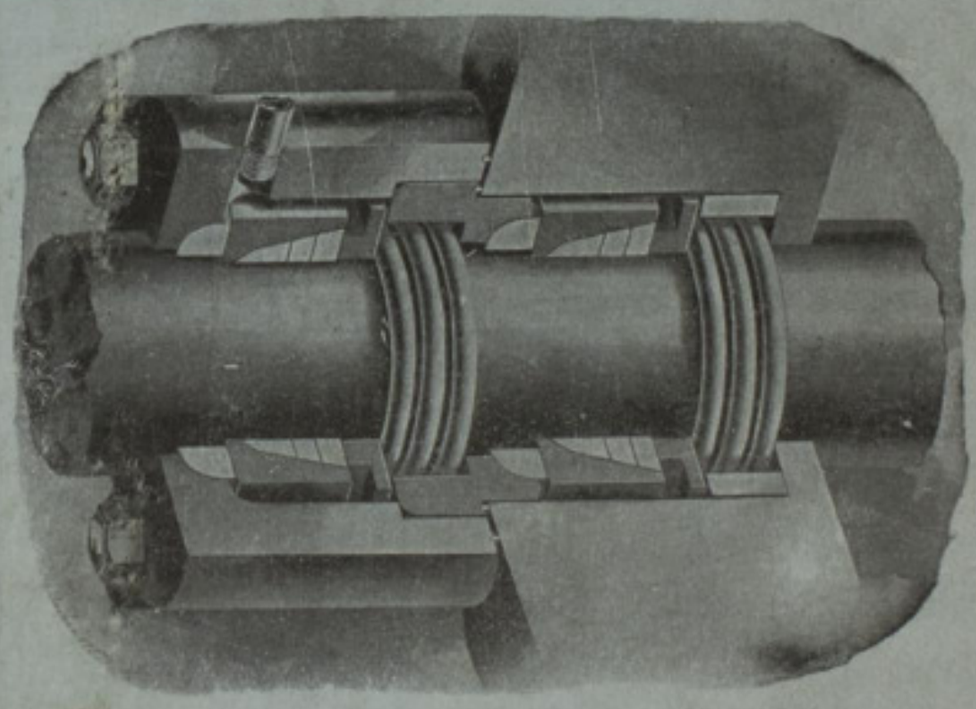
122 to 130 Centre St., :: :: :: New York City

Always have our classified Stock List before you
YOURS FOR THE ASKING

U. S. METALLIC PACKING CO.,

422 North 13th St.,
PHILADELPHIA, PA.

Our Packing is in use on 700 Steam Vessels in all parts of the world. It is a packing that can be depended upon. . . . .



RUBBER COVERED WIRES AND CABLES.

CLEVELAND STORE, 88 Superior Street.

WINDLASSES AND CAPSTANS

THE HYDE STEAM CAPSTAN WINDLASS.

The Hyde Steam and Power Windlasses and Capstans are the best in the market

They have been selected for most of the vessels now building for the Navy Department, Revenue Marine, Light-house Board and United States Coast Survey.

They are being furnished for the majority of the highest class Steam Ships, Merchant Vessels and Yachts now building.

HYDE WINDLASS COMPANY, : BATH MAINE.

LIFE PRESERVERS—BUOYS.

Acme. Solid Cork. Granulated Cork. Each Preserver stamped by U. S. Inspector guaranteeing proper buoyancy. Cork Filled Yacht Fenders. Cork Mooring Buoys. Material and Finish Guaranteed. Orders filled promptly.

ARMSTRONG CORK COMPANY.

Boston. New York. Philadelphia. Pittsburg. Chicago. St. Louis. Baltimore.

Midland Towing and Wrecking Co., Ltd.

MIDLAND, ONT., CANADA.

JAMES PLAYFAIR, { Pres't and Gen. Mngr.
D. L. WHITE, Vice-President.
J. W. BENSON, Sec'y and Treas.

First-Class Tugs for Wrecking, Raft Towing, Etc. Steam Pumps, Divers, Jacks, Hawsers, Lighters.

Howard H. Baker & Co., SHIP CHANDLERS AND SAIL MAKERS, 18 to 26 TERRACE, BUFFALO, N. Y.

MARINE REVIEW

WEEKLY.] AND MARINE RECORD. [ESTABLISHED, 1878

VOL. XXVI. CLEVELAND, O., DEC. 25, 1902. No. 26.